

# Isolated sheep help scientists study ageing

March 4 2013, by Harriet Jarlett

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Sheep keep having twins even in old age, say scientists.

New research, led by Dr Adam Hayward working at the Universities of Sheffield and Edinburgh , looked at a group of [sheep](#) on the remote islands of St Kilda, to see how [age](#) affected their lamb's prospects.

They looked at four things which measure the [reproductive success](#) of a ewe and her [lambs](#) ; whether they had a lamb, whether they produced twins, lamb weight and lamb survival.

'All of the traits declined with age, from about six years old, but the chance of having twins kept going. Whether a sheep was five years old or ten years old, it still had the same chance of producing twins,' says Hayward.

Most [physical traits](#) improve as a young animal grows and decline once it has passed its prime. So the scientists were surprised that twinning didn't decline like other traits.



Soay sheep.

In humans, the probability of having twins actually increases with age. Although the reasons why remain a mystery, scientists suspect women start releasing two eggs per cycle instead of one as their body ages.

Sheep [fitness levels](#) are measured by the number of surviving lambs they bear. 'Being able to reproduce in a given year is good for fitness and producing [twins](#) is related to fitness,' Hayward says. 'Lots of people are interested in age-related traits, and we've seen traits which don't decline before, but they rarely show things related to fitness.'

The study, published in [Functional Ecology](#), also found that younger sheep give birth to heavier lambs, which are likelier to survive.

'The biggest bottleneck for [mortality](#) is the first winter; if a lamb survives the first winter it has a good chance of going on to reproduce itself and heavier lambs are more likely to survive and not starve in the cold, barren months'

Soay sheep are a specific breed trapped on the inaccessible group of islands in the Outer Hebrides. Three times a year, researchers observe and collect data on each individual sheep from birth, and add it to a detailed database. The information, including survival rates and weight, is available for the past 25 years, giving scientists a unique insight into an entire population.

Studies into ageing rarely look at more than one trait at a time since long-term data is often sparse. This makes the detailed information about various traits in the Soay sheep invaluable.

'Soay sheep provide an excellent population for studying ageing as you can see how the data change for one individual as it grows. You can capture the same individual over and over again,' explains Hayward.

As humans seek to slow the ageing process, research into senescence - how the body deteriorates with age - is becoming more and more important in modern biology. Scientists are now looking at how immune function and cells in the Soay sheep are affected by age.

**More information:** Hayward, A. D., et al. (2013), Reproductive senescence in female Soay sheep: variation across traits and contributions of individual ageing and selective disappearance. *Functional Ecology*, 27: 184-195. [doi: 10.1111/1365-2435.12029](https://doi.org/10.1111/1365-2435.12029)

Provided by PlanetEarth Online

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