

Larger horns a gamble for young Soay sheep

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When it comes to winning mates, larger horns are an asset for male Soay sheep. But those that grow them may be putting their young lives on the line, according to a study published online on May 15th in *Current Biology*.

The new findings show that allocation of resources to horn growth can spell the sheep's premature demise if the environment takes a turn for the worse.

“We find that large horns decrease males' first-year survival when environmental conditions are poor,” said lead author Matthew Robinson of the University of Edinburgh. “Therefore, in an unpredictable environment, high allocation to early horn growth is a gamble, the pay-offs of which depend on the environmental conditions an individual encounters during its first year of life.”

The researchers did not find any evidence that horn growth in later years decreases the animals' chances at survival, “so provided males survive their first winter, large horns will only serve to increase their mating success later in life as they are better able to compete with other males,” Robinson added.

Previous studies showed that when environmental conditions worsen, male sheep are more likely to die than females. The researchers had also found evidence of a tradeoff between horn growth and lifespan in normal-horned Soay males.

To explore those links further in the new study, the researchers examined the relationships between horn length and fecundity, lifespan, and lifetime reproductive success (the total number of offspring sired by a male). Because they knew how the sheep were related to one another, they were also able to separate genetic and environmental influences on those fitness traits.

They found that horn growth was selected for under good environmental conditions but was selected against under poor environmental conditions. The results reveal that in unpredictable environments no single strategy may be optimal.

Such fluctuating selection is an “intuitively appealing” explanation for the maintenance of genetic diversity in secondary sexual traits, Robinson said. Although examples of fluctuating selection have been shown before, the new findings represent the only example, as far as the researchers know, of fluctuating selection on a secondary sexual trait in the wild.

Source: Cell Press

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