

Factors that drive sexual traits

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Grouse. Credit: Gilbert Ludwig - Ambient Scapes

Many male animals have multiple displays and behaviours to attract females; and often the larger or greater the better.

Understanding what has driven the evolution of these traits is an important evolutionary question.

A new study spearheaded by Matti Kervinen at the University of Jyväskylä, Finland, working with Carl Soulsbury from the University of Lincoln, UK; Christophe Lebigre, Catholic University of Louvain, Belgium and Heli Siitari, University of Jyväskylä, has revealed that these sexual traits are strongly age-dependant in black grouse.

The results have now been published in *The American Naturalist* journal.

The team explored how seven different morphological and [behavioural traits](#) were expressed across male's lives in this spectacular lekking bird, the black grouse. Black grouse have a particularly interesting mating system called a lek, where large groups of male grouse gather in open areas and display to the females. Females come to these sites to choose a mate.

Using a long-term study of black grouse in central Finland, the researchers showed that these sexual traits are strongly age-dependant in black grouse. Expression increased with age to peak values at the peak of their reproductive effort (approximately 3-4 years old) before declining.

At the same time there were differences as to where this peak occurred depending on the male's lifespan: long-lived [males](#) had lower trait expression at young ages and delayed upper limits in trait values compared to short-lived males. Furthermore, males increased their investment into the expression of these traits as they reach the end of their life.

Finally, the team looked at how the expression of these traits related to the amount of effort put into reproducing.

These results reveal the combined importance of age, life span and individual scheduling of reproduction in driving trait [expression](#). Accounting for these factors is therefore crucial to understanding how these traits have evolved and could explain the substantial variation observed in the sexually-selected traits in male black grouse and other species with weaker sexual selection.

More information: Matti Kervinen, Christopher Lebigre, Rauno V. Alatalo, Heli Siitari, Carl D. Soulsbury 'Life history differences in age-dependant expression of multiple ornaments and behaviours in a lekking bird' *The American Naturalist*,
www.jstor.org/stable/info/10.1086/679012

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