

# Beetles drive groundbreaking conservation project

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They are cursed the world over for contaminating food supplies and are a huge commercial pest, but the humble flour beetle is about to play a significant role in the management of endangered species.

The flour beetle - or *Tribolium castaneum* - will be the model in a major new study into the consequences of inbreeding, launched at the University of East Anglia (UEA) this summer.

Inbreeding is a potentially important problem in declining species across the world, and conserving genetic variation is now recognised as a priority by the International Union for Conservation of Nature.

When populations become isolated or depleted due to loss of habitat or exploitation, the gene pool is reduced which forces inbreeding between relatives, and therefore losses in genetic variability. This results in the increased expression of 'bad genes' which were previously hidden in a variable genome, leading to a range of problems usually associated with reproduction. This inbreeding depression then adds to the habitat loss or exploitation problems, further driving a population towards extinction.

Funded by the Natural Environment Research Council (NERC), the £400,000 project will experimentally evaluate which specific reproductive traits are affected by inbreeding, and how they impact on population viability. Once inbreeding depression and its causes are discovered, the project will determine how much new variability must be re-introduced to genetically rescue an inbred population from [extinction](#).

The results of the three-year study will help managers of conservation and captive breeding projects recognise when inbreeding is a problem, how it progresses, and how best to manage or reverse it.

"When a species is under threat, it is difficult to be sure whether inbreeding or other stresses are responsible for declines in numbers," said Dr Matthew Gage of UEA's School of Biological Sciences.

"Our previous work on wild rabbits in the natural environment implicates sperm as being sensitive to inbreeding. However, these large-scale experimental trials in the laboratory will shed new light on the relative importance of inbreeding as a conservation concern, identify which traits are most sensitive, and therefore could help us recognise populations under threat of [inbreeding](#) and manage their recovery."

Source: University of East Anglia

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