

Will climate change drive evolution?



We are currently witnessing an unprecedented rate of climate change and we just don't know exactly how that will influence evolution and extinction.

There are likely to be winners and losers with rapid climate change. The rate of environmental change may be just too fast for other species to evolve and there is a danger that they could become extinct. However, some research indicates that certain species are already adapting to a warmer climate, but this is still quite difficult to demonstrate.

Mixed-up migration

Researchers have recorded what may be a curious evolutionary consequence of climate change: the arrival order of two birds to UK shores, the sand martin and the barn swallow, has reversed.

Historically, barn swallows winter in southern Africa, arriving in Britain in late February or early March. The sand martin winters in western Africa, departing for the UK later in March. Warmer weather in Europe is driving changes in migration timing. When scientists from the Centre for Ecology & Hydrology (CEH) and Adam Mickiewicz University, Poland, examined 56 years of migratory data, they found that sand martins now arrive on average before barn swallows.

Tim Sparks from CEH says the findings clearly show the birds are changing at different rates and proposes this may be evidence of an evolutionary response or adaptation to a warming climate. The arrival date, at least in barn swallows, is heritable.

Relatively minor environmental influences such as one harsh winter can accelerate evolution in animal populations and rapidly change population sizes.

Chilly sheep

Scientists studying Soay sheep in the Outer Hebrides noticed that in years with long, cold winters the sheep population grew fastest when there were many large individuals within the population. In the 1980s big sheep were genetically favoured in this population because big sheep had more chance of surviving the harsh winters. But as the climate changes and the Soay sheep are not subject to such tough winters, there will be a reduced natural selection for larger animals.

Research has shown that changes in the size of a population is affected by body size, and that body size, in turn, is affected by various factors including genetics, climate, and the availability of food. The scientists have, for the first time, linked the big ecological picture with the genetic make-up of individual animals.

Further Reading

- <http://www.nerc.ac.uk/research/highlights/2007/climate.asp>
- [Patterns of spring arrival dates differ in two hirundines](#). Climate research, Vol. 35.