

Concern that British common frogs could croak it

April 20 2010, By Lucy Goodchild



Data on frogspawning was collected by the general public

(PhysOrg.com) -- Mass observations of frogs spawning have sounded a warning bell not only for the future of the common frog but also for Britain's wildlife more generally.

Frogs are so locally adapted that they may not be able to cope with even modest climate change, new research led by Imperial College London has found.

What's true of frogs is likely to be true for many other poorly-dispersing species. Their only alternative will be to move and that is not an option unless there is swift action to create landscapes that work for wildlife as well as people.

These are the conclusions of a paper published in the [Proceedings of the National Academy of Sciences](#). It analysed more than 50,000 UK observations of first frogspawn from 1998-2006 collated by Nature's Calendar, a national survey coordinated by the Woodland Trust.

A unique approach to assessing local adaptation was developed. It compared how relationships between temperature and spawning dates vary across Britain with how they vary over time.

All populations spawn earlier in warmer years but southern populations do so several days earlier than northern ones even if they experience the same temperatures, a difference that can be attributed to natural selection. Indeed, it was discovered that this local adaptation is detectable between populations throughout Britain in neighbouring 150km grid squares; areas the size of an average English county.



British frogs could be threatened by mild climate change

The paper's authors come from Imperial College London, the University of Edinburgh, the Max Planck Institute for Demographic Research in Germany, and the Woodland Trust.

Joint lead author Albert Phillimore, a Junior Research Fellow from the Division of Biology at Imperial College London, said “For [frog populations](#) to keep in step with medial projections of [climate change](#) for 2050-2070, they may need to spawn about 30 days earlier. Their current flexibility, however, may only enable them to spawn 7 days earlier. It’s unlikely that frogs will be able to evolve sufficiently rapidly, so they will need to move northwards. All frog populations face a challenge but the most southerly populations are in the greatest predicament because the English Channel provides a total barrier to immigration from further south.”

“Local adaptation has been assessed in relatively few species, as it has previously required logistically-challenging experiments”, said co-author, Richard Smithers, the Woodland Trust’s senior conservation adviser. “But like frogs, a great many other species are poor at dispersing and may be locally adapted.”

Jarrold Hadfield, joint lead author from the University of Edinburgh, added, “Our study demonstrates the great value of citizen science. The observations collected by the public have enabled us to gain important, if sobering insights, into the evolutionary challenges that [frogs](#) are likely to face”.

Provided by Imperial College London

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