Climate Change May Threaten Amphibians and Reptiles in Europe

Recent declines in and extinction of amphibian populations have been reported in many parts of the world over the past decades. Climate change has been suggested as one of the main causes to explain such declines. The effect of global warming on reptiles remains still relatively unexplored.

A recent study, carried out under the EU-funded research project ALARM\(^1\), has analysed the possible effects of climate change on reptile and amphibian species distribution in Europe. They modelled the distribution of 42 amphibian and 66 reptile species in Europe under four climate change scenarios proposed by the Intergovernmental Panel on Climate Change for 2050, using four different modelling techniques. Different assumptions regarding species dispersal ability and evolutionary and environmental factors were considered in the analysis.

The researchers found that increases in temperature are not likely to constitute a major threat to amphibian and reptile species in Europe. Indeed, a global cooling scenario would be much worse. However, the results showed that the response of amphibians and reptiles to climate change is highly dependent on their ability to disperse and colonise new habitats. In a scenario of unlimited dispersal, a great proportion of the amphibian and reptile species would be expected to expand their distribution in relation to the present. This is because warmer temperatures in the cooler northern habitats create opportunities for colonisation of new suitable habitats. On the contrary, if the species were unable to disperse, most of them would be expected to suffer considerable decline. Current levels of habitat fragmentation and degradation may reduce the inherent low dispersal ability of reptiles and amphibians.

But the fate of amphibians and reptiles may also be affected by availability of water, warn the researchers. The ability of species to cope with climate change may be offset by the predicted decrease in the availability of water. This is particularly true for amphibians. According to this study, species declines are projected to occur mainly in the south-west of Europe, in particular in the Iberian Peninsula, where the dry conditions are expected to increase. This is worrying because changes in amphibian and reptile populations of Portugal, Spain and France would affect 62% of the amphibian and reptile species present in Europe.

The current study provides new insights regarding the possible effects of climate change on European biodiversity, in particular amphibian and reptile species. The European Commission adopted in May 2006 a Communication which sets out an ambitious policy approach to halting the loss of biodiversity by 2010. In particular it identifies biodiversity and climate change as one of the four key policy areas.

\(^{1}\) ALARM project: "Assessing LArge scale Risks for Biodiversity with tested Methods" (http://www.alarmproject.net/alarm/), supported by the European Commission 6th Framework Programme Thematic priority for Sustainable Development, Global Change and Ecosystems (SustDev).


Contact: maraujo@mncn.csic.es

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