

TOM FINCH



Stormy outlook for long-term ecology studies

The closure of a 40-year project to understand and protect seabirds shows the false priorities of funders, warns **Tim Birkhead**.

In the early months of this year, a series of fierce storms battered Europe's western seaboard. Seabirds struggle to feed in rough water, and some 40,000 of them soon washed up dead on beaches. Climate change is expected to increase the frequency of such storms, so to understand the impact of global warming on ecosystems, we need to analyse the long-term biological impact of these events.

Until recently, I was in an excellent position to do this. For more than 40 years, I have studied populations of guillemots on Skomer Island, off the coast of Wales. My research has revealed, for example, that the birds now breed two weeks earlier than they did in the 1970s, probably owing to climate change.

This kind of research is not easy. It has taken four decades to accumulate the data necessary to understand how the population works because to do so requires accurate measures of how long adult guillemots live, how many chicks they produce, how old they are when they breed, what proportion of young birds survive to breed and so on.

No more. Funding for the project has been axed. As it stands, I have no money to pay a research assistant to help me identify and count exactly how many of the birds have managed to survive the storms.

To assess the storms' effects, we need to gather data from the 2015 breeding season to feed into the statistical models we use to calculate survival. It is frustrating that officials chose this moment to terminate our funding, when we have such an important opportunity to assess the vulnerability of seabirds to climate change.

Guillemots are one of our most abundant seabirds, and they are excellent indicators of the quality of the marine environment. For example, they are desperately vulnerable to oil pollution, and tens of thousands have died in oil spills such as those resulting from the sinking of the *Torrey Canyon* (1967) and *Erika* (1999) oil tankers. Partly as a consequence of such disasters, guillemot numbers have fluctuated widely over the past 80 years.

In the 1930s, Skomer's guillemot population stood at around 100,000 pairs. By 1972, when I started to work with them, the numbers had fallen to just 2,000 pairs, probably owing to oil spills from ships sunk nearby during the Second World War. Since the 1980s, the numbers have increased, and there are now around 25,000 pairs.

For the past 20 years, this study — the aims of which are to understand the population biology of guillemots and to implement a scientifically robust monitoring scheme — was funded by the Countryside Council for Wales. But in 2013, the council was consumed by a new quango, Natural Resources Wales (NRW), which terminated the funding of about £12,000 (US\$19,000) per year.

NRW implied there was a shortage of cash, but I think the move was down to a change in priorities. NRW does not seem to value what my study has achieved: a comprehensive health check for guillemots. There is a feeling out there that conservation and monitoring is low-quality science and should be cheap; there is also a feeling that monitoring does not matter.

For all those biologists who start what turn out to be long-term studies, continuity of funding is a major problem. Most research grants are for 3–5 years, and in the current economic climate it is hard to predict whether funding will be renewed. Of course, all researchers dream of continuous funding, but long-term ecological studies are a special case. They are often disproportionately successful in terms of new discoveries because researchers know their system or study species extremely well and under various environmental conditions.

Long-term population studies have shown, for example, that unlike humans, female chimpanzees do not experience a menopause. They have revealed that the age at which mute swans start and stop reproducing is a heritable trait. And they have demonstrated how rare environmental events — such as total food failure in one year — can turn cooperative, peaceful birds into selfish, brutal killers of their neighbours' offspring.

The current focus by the main funding bodies on what they consider economically useful research with a quick return is short-sighted. When my study started in the 1970s, climate change was barely on anyone's radar. The main benefit of long-term studies is that they allow

researchers to address problems that no one has yet imagined. If we are to have any hope of conserving species, we need to understand them, and we need to understand the way they are affected by environmental change.

Back in 1972, the aim of my original PhD project, supervised by Chris Perrins and the late David Lack, was to understand the dynamics of the declining population of guillemots on Skomer. Lack was famous for his work on the population biology of birds, an interest that was encapsulated in one of his best-known books, *The Natural Regulation of Animal Numbers* (1954). Quite what he thought I could achieve in a three-year PhD is still a mystery to me, given that guillemots live for at least 20 years and do not start breeding until they are at least five years old.

Forty years on, Perrins asked me whether I would soon be completing the project he set me. I would dearly like to. ■

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