THE PERSPECTIVE OF TIME: WHY WE NEED LONG-TERM EXPERIMENTS IN A CRISIS

The BES Annual Meeting in Edinburgh in December was probably the best I have ever attended – and I have been to a few (dozen). A lapse of time provides perspective and the difference between the applied ecological science presented at this meeting and that from the meetings of the 1980s is dramatic. That was the era of the Cold War when the prospect of a perpetual winter following a nuclear conflict was the big fear, but now we face the dual crises of a warming climate and loss of biodiversity. These are hugely complex political and scientific challenges with which the BES is rightfully fully engaged.

But somehow, as individuals, we need to balance the urgency we feel (or ought to feel) with a scientific perspective of time. With ecological catastrophe staring us in the face, the temptation could be to regard any experiment planned for the long-term as a self-indulgent luxury. When we founded the Ecological Continuity Trust (ECT) in 2008, the then President of the BES gave us his support, but privately confided that planning a century ahead was madly optimistic – the world would be very different in just ten years. Well, that was 14 years ago, and the President's hedged bet against his own opinion has proved to be a sound investment. ECT has 37 currently-active long-term experiments (LTEs) on its register in the UK and a User Group of more than 200 scientists and policy makers. Nonetheless, the nagging question "What use are long-term experiments in a crisis?" has not gone away, and it is timely to ask ourselves this again so that the charity remains on the right track.

Park Grass experiment, now in its 167th year.
Image courtesy of Rothamsted Research

So, here is my answer: three good reasons why we need LTEs in a crisis. Firstly, we need to remember that only through manipulative experiments can we actually get at the mechanisms of change. Otherwise, all we have to go on is correlation and guesswork. This is actually the advice that I was given as a first-year postgraduate student at my very first BES Annual Meeting. Back at the University of Sussex, it was my frustration that I could not imagine how I could do a useful experiment that would explain the species richness of chalk grassland in just two field seasons that led me to discover for myself the grandparent of all LTEs – the Park Grass experiment – now in its 167th year. Here is the second reason: LTEs are a resource for addressing questions not envisaged when they were started. Thanks to the foresight of our scientific predecessors, LTEs can be of immediate value in a crisis. This leads neatly on to the third reason: if we value existing LTEs, we surely have a duty to pay-forward by protecting them and starting new ones for use by those who will follow us. It is not too much to ask, is it?

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