



LONG-TERM EXPERIMENTS ESSENTIAL FOR OUR FUTURE

Jeffrey Duckett's insightful article in the summer edition of *The Niche* was most opportune in highlighting that many environmental questions are not being answered effectively. For a variety of reasons, some of our forebears did not set up the necessary long-term experiments (LTEs) that provide the *only* route to the required knowledge and evidence. Two examples quoted by Jeffrey illustrate the difficulties in starting and, more importantly, keeping LTEs going.

The article identified correctly that no LTEs were set up specifically to examine the effects on vegetation by the reduced rabbit populations following the introduction of myxomatosis. However, some studies were done, firstly by happenstance, secondly by design. The pioneering work of A.S. Watt FRS at Lakenheath Warren in the Breckland compared the effects of removing rabbit grazing on grassland communities across an acid to base-rich gradient. This work pre-dated myxomatosis, but on some grasslands Watt maintained comparisons into the post-myxomatosis era. For decades, Watt's plots were a cornerstone of field course ecology teaching. They were seminal for understanding the effects of rabbits on different grassland communities. Sadly however, when I worked at Lakenheath in the 1980s, only one enclosure remained (Grassland-A). This was monitored by Tony Davy until 1994 when the hidden plot markers disappeared.



A.S. Thomas set up a series of monitoring transects in six sites across southern England comparing vegetation through time in what today would be a before-after (rabbit removal) design. The data were stored under Terry Wells's desk at Monks Wood for at least 20 years and have never seen the light of day!

It could be argued therefore that the bare bones of LTEs were there to assess effects of myxomatosis but that they failed to materialise because of the retirement of Principals and changes in research emphases. Of course, ECT with its role in preserving 'continuity' did not exist back then. Their reinstatement – particularly the Lakenheath plots in the driest part of England – could now provide key insights into the effects of our rapidly changing climate on grasslands.

Jeffrey Duckett's second example was Cow Green in Upper Teesdale. Since the dam construction was so contentious, it is surprising that no experimental ecological restoration was attempted. Yet, at the same time further up the fell at Moor House, numerous experiments were devised to determine the environmental factors most relevant for

upland conservation. These experiments are now included in ECT's national register of LTEs. The question remains as to why no restoration experiments were established down the catchment in Teesdale. Thankfully, Margaret Bradshaw and colleagues have monitored the Teesdale flora since the dam construction and these data now form the ideal platform for future LTEs.

These examples clearly demonstrate that, in the past, we ecologists have missed golden opportunities and could (should) have done better. However, with the ECT acting as a focal point to promote the value of LTEs, I hope things will improve in the future. Four aspects are crucial: (1) replicated manipulative experiments; (2) dedicated leaders with a succession strategy; (3) full written methods so that new scientists can take over when retirement/death occurs; and (4) well-curated, secure databases. All these are in line with the ECT's ethos of championing LTEs and developing good practice.

What we can also predict is that ecologists will need new LTEs to answer new questions where no other route to knowledge exists. Jeffrey Duckett's suggestion of novel experiments in Britain's Atlantic oakwoods is certainly a good one: we simply have no idea how these bryophyte-rich communities will be impacted by climate change.

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