

Appendix S8

Indirect control of decomposition by an invertebrate predator

A. E. L. Walker, M. P. Robertson, P. Eggleton, K. Bunney, C. Lamb, A. M. Fisher & C. L. Parr

Data analysis

Decomposition rate

To determine how decomposition rate changed following ant suppression, we calculated decomposition rates of each substrate in the ant suppression and control plots. We calculated the decomposition constant (k) for each treatment (ant suppression and control) and bag type (open and closed) combination using the latest collection time point for each substrate. This gives the average decomposition rate over 12 months, and although decomposition rate varied over time, it is useful for comparing between treatments and substrates. Following the methods of Olson (1963), to calculate k , we used the following equation:

$$k = \frac{-\text{natural log}(X/X_0)}{t}$$

where t is the time in years since the decomposition bag was placed on the plot, X is the substrate mass remaining at time point t , and X_0 is the original mass at $t = 0$ years. This method assumes that k is constant, and while it is likely that k will change across the different collection time points due to seasonal effects, using the latest suitable collection time point to calculate k is useful for estimating average decomposition rate and for comparing between treatments and substrates.

Olson, J.S. (1963) Energy storage and the balance of producers and decomposers in ecological systems. *Ecology*, **44**, 322-331.