**Varying responses to soil disturbance by animals at the global scale**

Soil foraging by animals has substantial non-trophic effects on ecosystems through their effects on soil disturbance. This results in altered biogeochemical properties and changes to plant and animal community composition. Despite the importance of soil disturbing animals, there has, to our knowledge, been no systematic assessment of their global effects on ecosystem products and processes. We compiled a database of 119 studies across all continents except Antarctica, of the effects of animal disturbance on 22 response variables and conducted a meta-analysis to examine global patterns. The effects of animal disturbance were wide-ranging; with increases in some variables such as erosion and plant recruitment with disturbance, reductions in others, such as biological soil crust richness and plant cover; and a large number of neutral effects. We describe the global distribution of these effects and their implications for the maintenance of ecosystem structure and function.

**A continental assessment of grazing effects on ecosystem structure, function and composition**

Grazing is one of the most extensive forms of human management on Earth. The effects of overgrazing on ecosystem products and processes have been studied widely, and the overwhelming consensus is that overgrazing leads to declines in ecosystem health. We undertook a continental-scale meta-analysis of the effects of grazing by domestic and native herbivores on 278 biotic and abiotic response variables using data from 221 published and unpublished papers, reports and theses from across Australia. Log response ratios for ecosystem composition, structure and function were all negative in the presence of grazing, and increasing grazing pressure reduced function and composition, even under the most benign grazing contrasts. We identified some differences in effects among different herbivores (e.g. sheep vs cattle). Plant biomass and cover, and animal richness declined in response to increasing grazing, but overall, results were consistent across different rainfall zones. Our results reinforce the view that grazing has generally negative impacts on ecosystem products and processes.

**Evidence for the spatial self–organisation of litter patches in semi–arid woodlands**

Spatial self-organisation of plants and soils is a typical feature of many systems. Different mechanisms have been proposed to explain self–organised patterns, including scale–dependent feedbacks and disturbance recovery mechanisms. In semi-arid systems, there is limited evidence for the spatial self–organisation of leaf litter despite its obvious presence within vegetation patches. We measured the cover, size distribution and spatial arrangement of perennial vegetation patches and surface litter patches in four vegetation communities in a semi-arid woodland, one of which had been cleared of trees 50 years previously. Across all communities we detected a high correlation, but only a small spatial association, between perennial patch cover and litter cover. Additionally, large perennial patches tended to form multiple smaller litter patches. The effects of tree removal were still evident 50 years after tree removal, with greater perennial patch cover and greater variability in surface litter arrangement than the uncleared analogous community. We found no evidence to support scale-dependent feedbacks occurring between litter and perennial patches, with little relationship between perennial patch size and the strength of its association with litter. The distribution of litter patch sizes however, was consistent with a truncated power law relationship, suggesting that disturbance–recovery mechanisms may play an important role in the spatial self–organisation of litter.