
Category: Scientific

Themes: Urban

Title: Earthworm community development within translocated grassland soils at Manchester Airport (1998-2014)

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Text: Construction of a second runway at Manchester Airport (1997-2000) included a £17 million environmental package concerned with habitat restoration, relocation of species and translocation of valuable habitat components. One focus was on legally protected vertebrates such as great crested newts and badgers. To this end, a monitoring programme was established to assess earthworm communities (significant prey items for the given protected animals) within areas of translocated grassland. Major upheaval of turf can have negative consequences on soil biota, so its integration with receptor subsoil was essential. The work reported here relates to annual (autumn) monitoring (1998-2014) of 4 translocated grassland areas. Digging and hand sorting of soil, followed by vermifuge application to replicated plots was used to extract earthworm specimens. Twelve species of earthworm were recorded, representing litter dwelling, shallow, and deep burrowing ecological groups. Presence of *Lumbricus terrestris* in vertical burrows showed these grasslands have been integrated into their new locations. Total earthworm numbers fluctuated during the monitoring period, with lowest density at 4 per square metre and highest more than a hundred times larger. Similarly, biomasses have ranged between 1g to 110g per square metre. Significant differences can be attributed to a number of factors including type of translocation undertaken (turf transfer vs. soil alone) and also between grassland sites (wetter lower lying, vs. constructed hillocks). Meteorological data suggests that the most significant environmental aspect during monitoring was rainfall, with dramatic earthworm reductions in 2003, a year with a particularly dry summer. Great crested newts have been located from soil pits when sampling for earthworms at one of the areas. Earthworm community composition has been dynamic over the monitoring period suggesting that this and population size need to be appraised over realistic timescales.