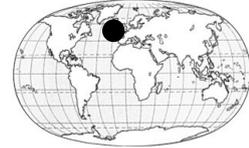


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SOIL SEED BANK DYNAMICS AND THE LONG-TERM IMPACT OF THREE INVASIVE SPECIES

The accumulation of viable seeds in the soil seed bank and alterations in soil seed bank diversity, composition and abundance represent major factors in determining the success of certain invasive species. Assessment of the impact of three invasive herbaceous species on biodiversity (*Heracleum mantegazzianum*, *Gunnera tinctoria* and *Fallopia japonica*) was investigated using a combination of floristic and seed bank analysis. A stratified random sampling design (n=20) was adopted and samples were collected in May and October 2004 from three sites per species from three depth categories (A=0-5cm, B=5-10cm, C=10-15cm). Preliminary results showed that species richness declined in both the aboveground vegetation and in the seed bank, the impact varying with the site and the invasive species examined. Seedling density of native species usually declined in the invaded seed banks and species composition was profoundly altered at each site. *H. mantegazzianum* comprised approximately 60% of the seed bank, with a mean value of 9,588 seedlings m⁻². *G. tinctoria* represented 10.40% and 33.89%, respectively, of the invaded seed banks, with a mean value of 7,639 seedlings m⁻², whereas *F. japonica* does not establish any seed bank in the British Isles. Of the species present in the seed bank, grasses showed the greatest decrease both in composition and abundance. A general increase in the abundance of the Juncaceae was recorded in each invaded seed bank, particularly *Juncus effusus* and *J. bufonius*, although these species were not recorded in the above ground vegetation. Observation of seed germination patterns, based on the timing of germination and depth-dependent analysis, indicated a transient seed bank for *H. mantegazzianum*, whereas *G. tinctoria* formed a persistent seed bank. Despite not producing viable seeds, *F. japonica* had the greatest impact on both the vegetation and the seed bank.

keywords: invasive species, biodiversity, seed bank