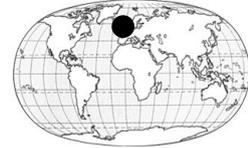


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MODELLING THE SPATIAL SPREAD OF JAPANESE KNOTWEED (*FALLOPIA JAPONICA*) ON A LOCAL SCALE IN THE UNITED KINGDOM

Given the invasive nature of *Fallopia japonica* (Houtt.) Ronse Decraene (syn. *Reynoutria japonica*, *Polygonum cuspidatum*, Japanese Knotweed) in Europe, USA, Canada and New Zealand it is no wonder that it is a major concern of many public and private organisations, land managers and landowners alike. These parties all share a common desire to at least control, if not eradicate the plant and halt its relentless spread. A number of different management strategies have been applied and it is important to ascertain which is most appropriate in a given situation. With this in mind, tools to test the impact and efficiency of these techniques both quickly and cheaply would be extremely useful.

We are developing mathematical models for the spread of *F. japonica* on a local scale, such as a patch of wasteland, a site marked for development, or a stretch of river, which could be used to predict how the existing aerial shoots of *F. japonica* might spread over time. One of our benchmarks will be to reproduce data observed in the field over six year period in Swansea, UK. As a part of this work we have developed a 3D random walk simulation of the subterranean rhizome network of a single stand that utilises data from our fieldwork. We use this simulation to investigate the importance of various parameters in affecting crown density and rates of stand expansion. Here we present some of the relevant fieldwork, the model itself and discuss some of the results of our work.

keywords: *Fallopia japonica*, modelling, rhizome, spread