

water@leeds SPRING

Report of Activity

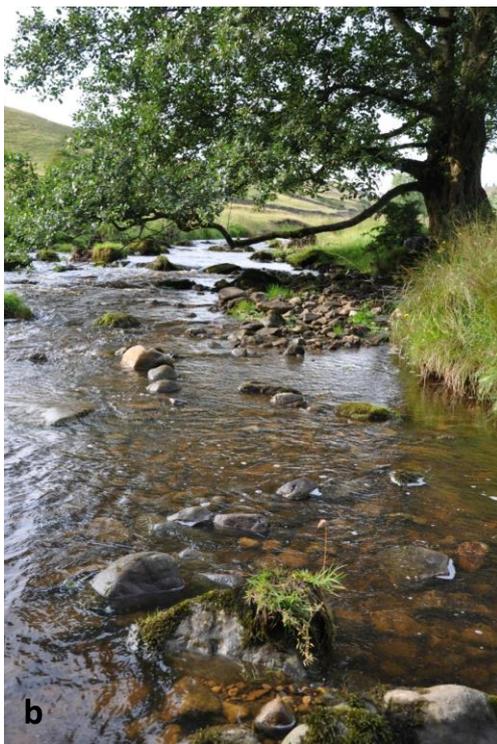
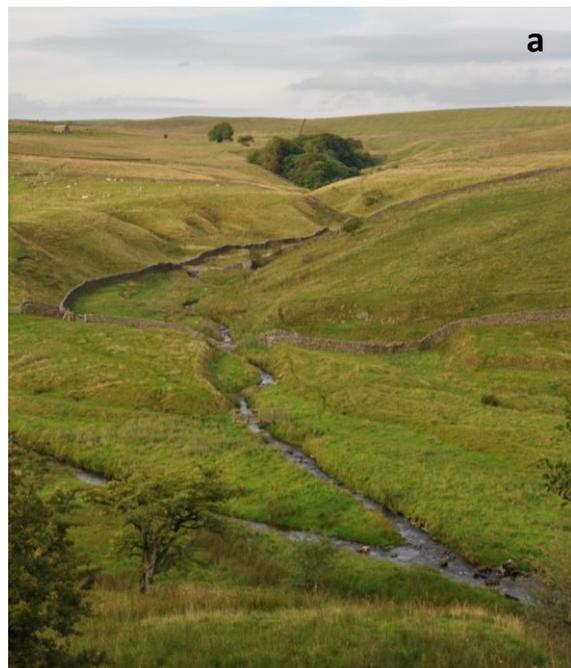
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My water@leeds SPRING grant enabled me to compare behaviour of invasive signal crayfish between core populations and populations at the leading edge (fringe) of invasions. This has applied interest because signal crayfish are a problematic invasive species, and theoretical interest as a case study of both the role of behaviour in the invasion process, and invertebrate personality.

Signal crayfish were collected from core and fringe populations in three rivers in Yorkshire: Bookill Gill/Long Preston Becks, the River Wharfe and the River Ure. Existing data guided the initial location of field sites, with novel field surveys providing confirmation. An unexpected outcome of these surveys was an augmented known range of signal crayfish in the River Ure.

Investigating crayfish behaviour: from field to lab

(a) Overview of one field site: Bookill Gill Beck meeting Long Preston Beck at their confluence. The leading edge of the invasion is downstream of the confluence (to right of photo), with the core population further up the valley **(b)** Crayfish were collected from marginal shallows, such as these at the leading edge of the signal crayfish population in Long Preston Beck **(c)** Testing exploratory behaviour in mazes in the laboratory. Four crayfish are being tested in parallel.



After one week of acclimation in the laboratory, individually-labelled crayfish were run through a set sequence of behavioural assays to quantify boldness, exploration, sociality, foraging voracity and dispersal tendency. Observations were made at night, under a reversed photoperiod, as this is when crayfish are most active. After a further two weeks in the lab, the same individuals were run through the same sequence of assays to check for consistency in individual behaviour, or personality.

Behavioural data collection has just been completed but the data have not yet been processed. Initial analyses indicate no difference in behaviour between core and fringe populations: an unexpected result, but an apparently conclusive one. I now plan to collect additional data on crayfish metabolic rates to see if that is related to individual differences in behaviour.

As proposed, the majority of the SPRING grant was spent on transport to field sites (£180.90). Repeated field trips were necessary to reliably locate the invasion front and collect sufficient subjects. The remainder of the grant paid for equipment to build the behavioural assays (tanks, webcams, red lights, plastic pipes for crayfish shelters; £68.91).