

[The geomorphological context and impact of the linear emergent macrophyte, *Sparganium erectum* L.: a statistical analysis of observations from British rivers \(Gurnell et al. 2013\)](#)

[1]

This paper explores the geomorphological context and impact of the widely-occurring, linear emergent macrophyte, *Sparganium erectum*. Forty-seven sites across Britain were selected for field investigation, spanning the range of environmental conditions within which *Sparganium erectum* had been found to be present in previous analyses of national data sets. A combination of descriptive graphs and statistics, principal components analysis, and Kruskal-Wallis tests were used to explore the large multivariate data set collected at the 47 sites.

The analyses showed that *Sparganium erectum* is present in significant quantities in relatively narrow and shallow (< 18 m wide and < 0.9 m deep to the limit of terrestrial vegetation), low gradient (maximum 0.004) channels of varying bed sediment calibre (cobble to silt). Within these environments, *S. erectum* stands (features) were associated with fine sediment retention, aggradation and submerged landform construction, leading to bench development and so, potentially, to adjustments in channel form and position. Sediment retention and landform construction within *S. erectum* features was most strongly apparent within reaches with a relatively high *S. erectum* cover and the presence of large area *S. erectum* features. It was also associated more weakly with *S. erectum* features that were comprised of relatively higher densities of plants with relatively smaller inter-plant spacing and fewer leaves. The sediment retained in *S. erectum* features and associated bench and bank toe deposits showed larger numbers and species of viable seeds, indicating the potential for colonization and growth of other species on *S. erectum* features once they aggrade above the low flow water level and are no longer a suitable habitat for *S. erectum*.

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