

IMPACT OF RIPARIAN LAND USE ON INVERTEBRATE ASSEMBLAGES

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INTRODUCTION

Historic modification and more recent agricultural intensification has led to the degradation of river catchments. The Water Framework Directive now requires better management of our waters and their ecology. Restoring riparian habitat not only mitigates the effects of pollution on the riverine habitat but may also benefit soil conservation and biodiversity. We studied two river catchments in north-east Scotland where, aided by agri-environment schemes, efforts have been made to improve waterside habitat with measures such as buffer strips, tree planting and adding meanders and pools back into the water courses. We investigated whether these measures affected invertebrate abundance and species richness, indicating the successful restoration of riparian habitat.



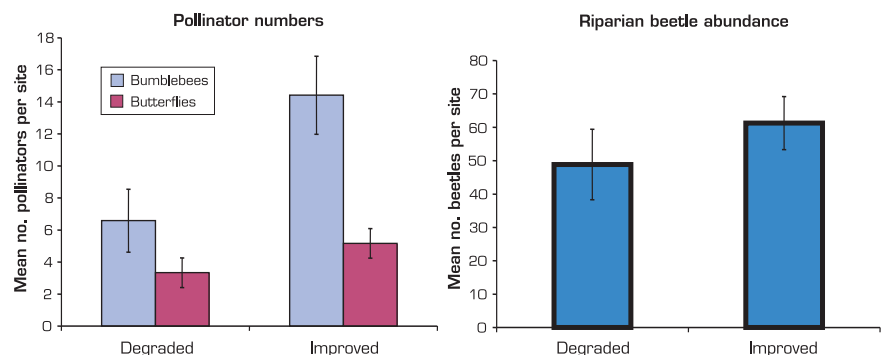
INVERTEBRATE SAMPLING

From two river catchments in north east Scotland, the Tarland and the Ythan, we selected 36 sites categorised as either degraded or improved. We surveyed:

1. Pollinators (bumblebees and butterflies) as indicators of habitat quality,
2. General arthropods and specifically Coleoptera adapted, or associated with, exposed riverine sediments including many rove (Staphylinidae) and ground beetles (Carabidae).

RESULTS

Bee abundance and species richness showed significant differences between degraded and improved sites ($p < 0.05$). Butterflies and riparian beetles increased at improved sites but the results were not significant. No differences were observed in the abundance of general arthropods.



SUCCESSFUL RESTORATION?

Our results suggest that simple measures to improve waterside habitat do not re-create riparian habitat and have little or no effect on terrestrial invertebrate abundance and species richness. From vegetation surveys we can confirm an increase in tall-growing flowering plants such as thistle (*Cirsium* spp.) and rosebay willowherb (*Chamaenerion angustifolium*) which provide abundant nectar and pollen for bumblebees but are not representative of riparian vegetation. Preliminary results from aquatic surveys show improvements made on land are contributing to increased aquatic invertebrates and fish, including salmonoids, in the rivers.



FUTURE WORK

We are currently expanding and developing the work on aquatic invertebrates including targeted sampling, leaf decomposition/colonization experiments, and trophic interactions. We are also looking at the contribution of material from the terrestrial/riparian zone to the aquatic system.



Water beetle (Hydrophilidae)