

Increasing habitat area

Project Habitat on the upper tidal Thames and tributaries

Introduction

Urban rivers have often undergone substantial engineering modification. Consequently, many have become highly degraded aquatic ecosystems with minimal riparian habitat. Most river restoration techniques are not feasible within large urban rivers, and so there is a need to develop novel ways of greening urban river courses. This case study, adapted from Francis and Hoggart (2008), describes how existing features that can function as habitat for riparian plants can be used on more featureless areas of river without the need for large-scale remediation engineering. The work described is part of Project Habitat, a collaboration between Kings College London and Thames21 (a charitable organisation).

Background

Along the River Thames through central London, the river is almost entirely contained within walls which have constrained it such that the tidal range is an estimated 6 m higher and the remaining intertidal foreshore is largely depleted of all species. Plant species richness is however significantly higher on river walls. Surveys suggest that the physical and environmental characteristics of river walls are likely to influence their capacity to function as ecological habitat. For example, walls composed of more complex construction materials (brick and boulders) may be more diverse than simpler structures (concrete and sheet piling). The opportunity exists to use river walls and other artificial structures such as jetties to improve habitat along urban rivers. This can be done by installing walls which are designed to be more complex or by adding modifications to existing walls.

Materials and Methods

Study area

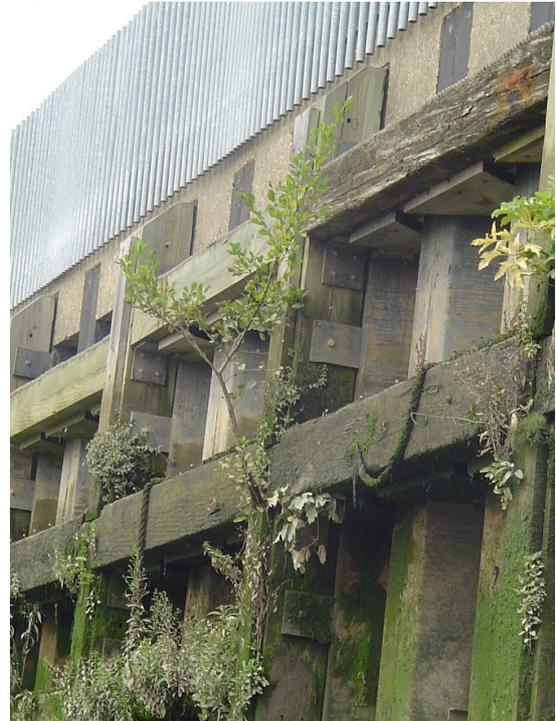
The Project Habitat area runs from Hammersmith in West London to Woolwich in East London. Management of the upper tidal Thames is complicated and involves several organisations. The Port of London Authority is responsible for navigation, pollution control and land-use/planning issues. The Environment Agency is responsible for flood defence, water quality and any issues relating to environmental protection and conservation. Both need consulting to gain planning permission for any structures to be installed.

Method

Some trial modifications, such as the addition of wall ledges and timber fenders to sheet piling, have been installed at Deptford Creek. Pot plant supports made of coconut coir and plastic mesh were fastened to river walls along the Thames to make 'ecofenders'. Wooden rafts (octagonal structures approximately 1.5 m across) have been installed at Limekiln Quay in Southwark.

Results

- As the figure shows, so far the structures installed along Deptford Creek have supported the colonisation and development of plant communities. This is in comparison to areas of the creek without these structures.
- Between installation in August 2006 and survey in August 2007, ten plant species and eight invertebrate species (largely typical foreshore species) had colonised the Limekiln rafts.
- The ecofenders have been colonised by a range of plants and invertebrates, particularly willow saplings and weedy plants suitable for nectarivorous invertebrates.



Plant communities colonising the wall ledges and timber fenders at Deptford Creek (photo © Simon Hoggart and Robert Francis, KCL).

Discussion

Artificial structures such as river walls can function as habitat for plant and invertebrate species in urban rivers, and in some cases can be more diverse than remnant habitat. Installing or retaining any structures that increase the habitat heterogeneity of river walls or provide microsites for seeds seems to have great potential for rapidly greening urban river courses and increasing biodiversity.

Future plans

Rob Francis who co-ordinated the work at KCL wrote that 'further development and rigorous testing of installations is required in urban rivers to make sound restoration recommendations'.

Reference

Francis, R.A. and Hoggart, S.P.G. (2008). Waste not, want not: the need to utilize existing artificial structures for habitat improvement along urban rivers. *Restoration Ecology* **16**(3), 373-381