River Restoration Workshop 1

Dealing with barriers - background and workshop aims

The identification by the Environment Agency of 'quick win' restoration opportunities has targeted weir removal on a large number of watercourses. The intention is primarily to improve fish passage but in many cases alterations will also affect the sediment transport regime of the river, with both positive and negative effects likely. This workshop session attempted to synthesise the approaches used and lessons learned to date, drawing information from participants on the following key areas:

- Type of structures dealt with
- Type of river on which structures are located
- Background information used to define a removal methodology
- Removal methodologies adopted
- River response to removal
- Lessons learned – ways to improve methods for the future
- Other useful information including Contractors, EA contacts etc.

Workshop outcomes in summary...

Our discussions showed that much 'weir removal' work has been done. This was certainly amongst the most frequently used terms during this session. Why do we remove barriers? Our most frequently quoted reasons were restoration of natural processes (morphology and flow regime in particular), ecology (fish passage), flood risk, water quality and health and safety. Most barrier removal projects have been undertaken in passive and active single-thread types of river reaches followed by pool-riffle types. A similar pattern will be applied to the planned future work.

When looking at processes that have been considered in barrier modification projects, ecology, morphology and historical context were the most frequently listed, followed by modelling, design and implementation. Overall, however, we were pleased to find that in the vast majority of river restoration projects the key processes are the combination of these rather than one or two processes governing the restoration design.

Our experience shows that the greatest success has been with barrier removal for fish passage purposes, river naturalisation, decrease of maintenance costs and also building good team work. Issues still remain with landowner approval, local perception and conflicting interest groups and funding constraints (particularly in terms of project life and time).

In the following pages we present the key outcomes of this workshop session in more detail.

Dealing with barriers – our view

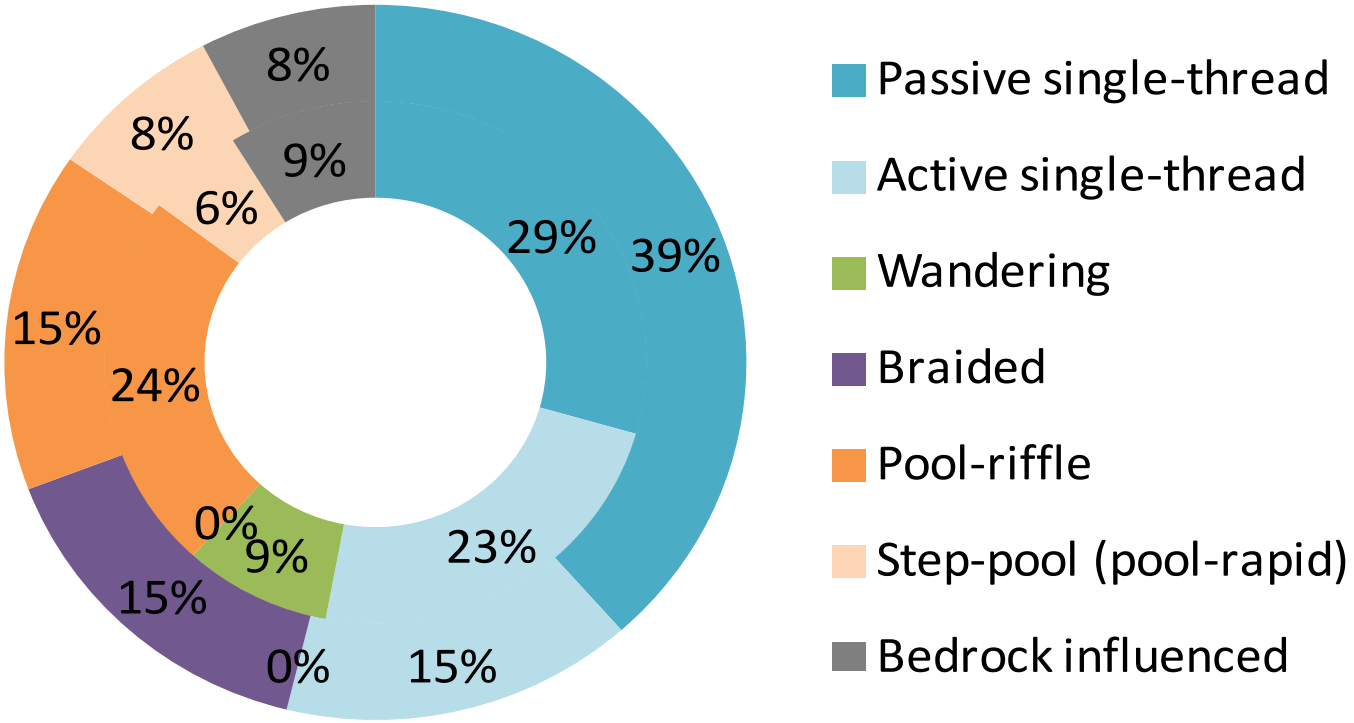
Why modify river barriers?

We have identified the following as the most frequently occurring reasons for barrier modifications:

- Economic (e.g. maintenance costs)
- Health and safety
- Instability, erosion and scour
- Sediment transfer
- Ecology (most frequently fish passage)
- Change to control of water levels
- Restoration of natural processes (morphology/flow regime)
- Historical
- Water quality
- Flood risk
- Hydropower (renewable energy)
- Legislation (namely WFD)
- Other uses (such as abstraction)
- Planning and development

River reaches we worked on and are planning

We have done most of the barrier removal work, over 50%, in passive and active single-thread river systems, followed by pool-riffle river reaches. Our planned work includes these river types too.



Processes, concerns, lessons and gaps

What processes were considered and what will be accounted for in the future projects?

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What are our main concerns?

- Obstruction to fish passage
- Erosion issues upstream (e.g. as a result of removing a weir)
- Impacts on flood risk following a weir removal
- Spread of invasive species
- Visual impacts
- Loss of historical value (heritage value of structures)

Lessons learnt - successes, issues and gaps to fill

Successes	Issues	Gaps to fill
Increase in fish populations	What is cheaper – barrier modification or a fish pass?	How to define success?
Naturalisation of river processes	Upstream erosion issues and channel degradation	Long term monitoring
Decrease of maintenance costs	Local perception (a change is often seen negatively)	Lack of specific expertise/knowledge of river processes and form
Improvements in sediment continuity	Sediment continuity	Consideration of cultural heritage, specialist knowledge and good contractors
Ecological improvements	Low cost efficiency	Increase consideration of overall habitat improvements as well as fish passage, and upstream morphological reinstatement
Building contractor/consultant relationships & team work	Project delivery issues due to lack of communication between contractors and designers	Better use of visualisations to communicate the design to contractors and interest groups
Benefits to community engagement and education	Landowner approval problems. Conflicting views of interest groups (e.g. anglers)	Better engagement of IDBs, landowners and community
Increased socio-economic benefits and values	Funding time constraints	Raising awareness