

River Restoration Workshop 4

River & floodplain restoration



The Environment Agency and Natural England have instigated a number of combined river and floodplain restoration opportunities with the emphasis on the reconnection of the process links operating between the river channel and floodplain. This has involved activities such as flood bank removal, flood bank realignment, palaeo-channel reconnection and floodplain vegetation alteration and improved floodplain management. This workshop session attempted to synthesise approaches and lessons learned to date from integrated restoration attempts.

We discussed the following key areas:

- Type of river on which measures have been tried
- Background information used to define a restoration methodology
- Restoration methodologies adopted
- River response to restoration
- Lessons learned - ways to improve methods for the future
- Other useful information including Contractors, EA contacts etc.



Workshop outcomes in summary...

Our discussions highlighted that most river and floodplain restoration projects have been commissioned for passive single-thread river types over (50%), followed by active single-thread rivers. Only small proportion of projects involved pool-riffle, braided or wandering rivers. We have not worked in bedrock influenced river systems, probably because floodplains are typically more constrained. Regarding the planned river and floodplain restoration projects, we see most work opportunities again in passive and active single-thread rivers (over 70%), whereas only limited work seems to be planned in pool-riffle, step pool or wandering rivers.

The processes that we consider when designing river and floodplain restoration schemes include particularly morphology and specific requirements of the particular design, followed by ecological and historical context as well as engineering aspects.

We then focused on discussing restoration features that we would expect to find in narrow and wide floodplains. The former include sections of anastomosed river, riparian woodlands, bedrock outcrops, plunge pools and steps, steep slopes. The latter include on and off line ponds, wet woodlands, riffles and pools, depositional and erosion features, meanders, oxbow lakes and paleo channels. In practice, our work has focused around creation of reedbeds and pools, enhancement of drainage ditches, reconnection of paleo channels, finger channel recreation to improve connectivity with floodplains or improvements to gravel bed.

In the following pages we present the key outcomes of this workshop session, including more detailed statistics and illustrative photographs.

River & floodplain restoration – our view

Our vision - what natural features do we want to see in floodplains?

Narrow

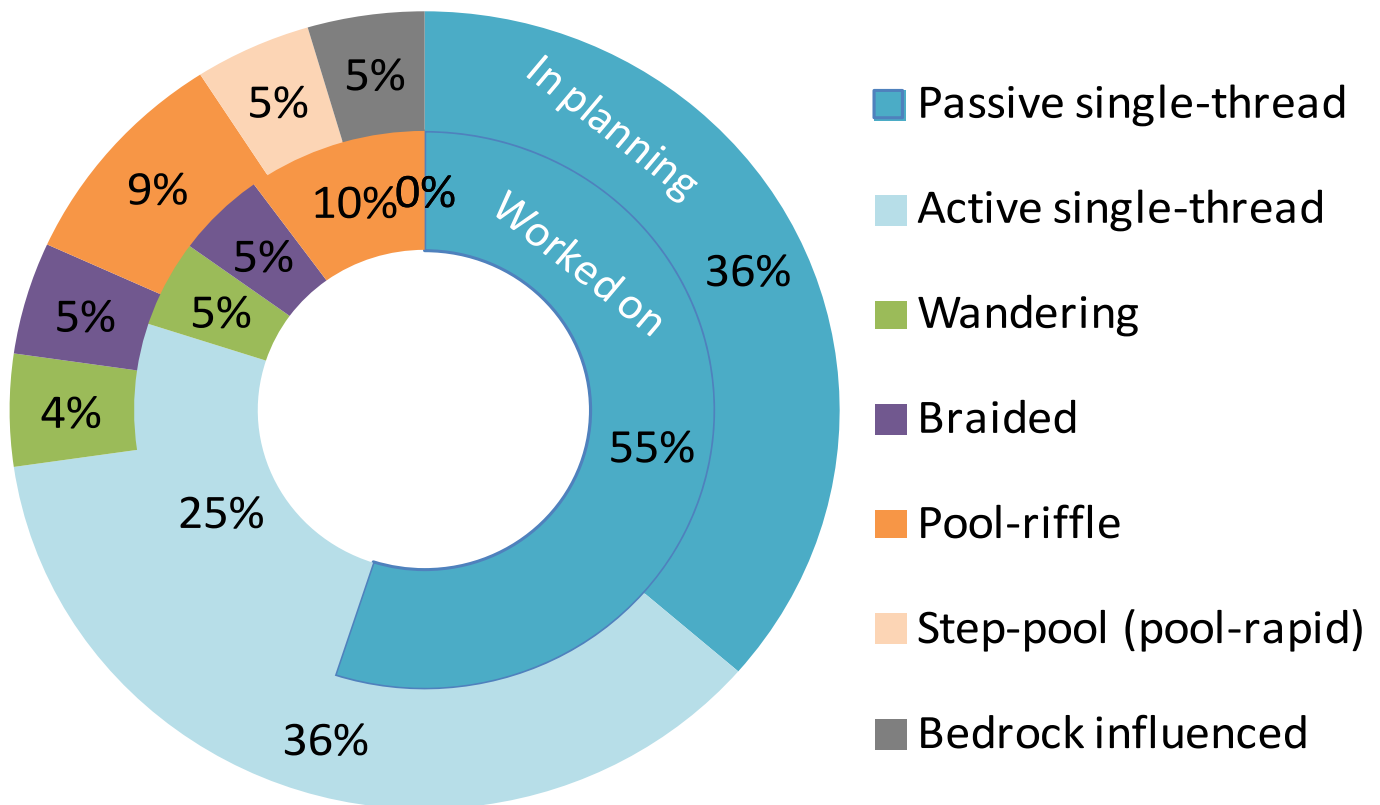
- Sections of anastomised river
- Riparian woodland
- Bedrock outcrops
- Plunge pools and steps associated with step - pool reaches and morphological units
- Steep slopes or gradients associated with the upland character of these reaches

Wide

- Offline ponds or wetland areas
- Woodland or wet woodland
- Riffles and pools within channel
- Depositional features (e.g. bar)
- Areas of erosion
- Meanders
- Oxbow lakes or meander cut-offs
- Paleo channels

River reaches we worked on and are planning

Our experience shows that the dominant type of river reach for which we have undertaken river and floodplain restoration and have projects planned for are passive and active single-thread systems, followed by pool-riffle systems. Step-pool or bedrock influenced river types were included. We agreed on a similar pattern for our future river and floodplain restoration work.



River & floodplain restoration – our view

What methods have we seen in practice?

We have identified the following approaches that we have used in river and floodplain restoration :

- Reedbed and pool creation
- Creation of habitats and pools for wading birds
- Enhancement of wet grassland
- Enhancement of drainage ditches
- Reconnection of paleo channels and pools
- Improvements to floodplain connectivity and finger channel creation
- Floodplain reconnection for flood storage purposes
- Improvements to gravel bed

To create these, we have most frequently considered morphological, design and ecological processes, followed by historical and engineering aspects. Encouragingly, this means that the river and floodplain restoration designs are likely to be sustainable and successful, because we put great emphasis in working together with the natural characteristics of the river and its environment . Unlike elsewhere, these approaches are commonly supported by expert assessments, which include hydraulic modelling, studies of impact on downstream water levels, floodplain flow routing, etc.

Issues that remain

We feel that we have addressed the shift in regulatory emphasis, mainly as a result of WFD objectives, in many areas. We are also improving in using successfully completed and functioning river and floodplain restoration examples across the country to gain funding and to learn from.

The response from stewardship and public support and engagement vary depending on the degree of success of the restoration scheme. It

is important to assess the positive and also the negative feedback and learn from this experience for future projects.

The main areas we feel are yet to be addressed include acceptance or uncertainty of change in respect of public perception and nervousness when it comes to impacts on flood risk. Again, sharing examples of successes would help to address this issue. Flood risk impacts can be effectively communicated, at the right level, through visualisations at workshops.

