

Geomorphological assessment of riverine SSSIs for the strategic planning of physical restoration

Many river SSSIs, or sections of river SSSIs, have had physical modifications to the channel that affect their optimal functioning as habitats for characteristic wildlife communities. These are recognised as reasons for "unfavourable condition" and include: inappropriate dredging; inappropriate weirs, dams or other channel structures; siltation; and inland flood defence works. Natural England's SSSI remedies programme includes "river restoration project" as a mechanism for achieving "favourable condition".

Hitherto, river restoration projects have been undertaken on a reach scale in an opportunistic way. Our approach to river restoration operates at a whole-river scale, taking into account larger-scale geomorphological processes that are inadequately considered by traditional approaches to restoration planning. The aim of the planning process is to generate whole-river physical restoration plans, through geomorphological assessment and ecological interpretation, that can be considered consistent with the favourable condition of the SSSI. The plan then directs available resources in the most cost-effective way, making the most of all available delivery mechanisms and budgets. Progress with implementing the plan becomes a key measure of site condition going forward.

In order to provide a robust evidence base on which to build restoration plans, a fit-for-purpose assessment of past and present geomorphology of the river channel is required, leading to a geomorphologically based, ecologically informed vision for physical restoration of the river. A standard technical specification for geomorphological assessment, including details of the outputs required, would help ensure Natural England acquire the information needed.

What was done

The research had the following objectives:

- To generate a standard specification for geomorphological assessment which can be applied to any of the 35 river SSSIs in England. Its key attributes should be:

a) it is understandable and clear to the contractor and will lead to a tailored product; and

b) in addition to the geomorphological information generated in the audit, there should be an overall conclusion about the physical state of the river (degree of modification, functioning) and suitability for remedial action plus an outline set of options for each major reach.

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- To assist in the further development of the rationale for SSSI river restoration and a narrative of generic issues relating to each river type.

The work was undertaken by literature review, consultation with key contacts, and the collation and analysis of existing data. The researchers reviewed fluvial audits undertaken to date in England and evaluated the range of approaches and information they contain. In addition, the technical specifications for recent fluvial audits were critiqued. Data and analytical requirements for developing physical restoration plans for SSSI rivers were reviewed.

Results and conclusions

A generic technical specification for geomorphological assessment has been produced as an annex to the main technical report. The specification details the necessary field data, historical data (where available), data processing and interpretation and the format of outputs. Critically, ecological interpretation of past, present and potential future physical condition of the river channel is fully integrated with the geomorphological assessment process. This ensures that recommendations for physical restoration of the channel are ecologically relevant and appropriate to the characteristic flora and fauna of the river type.

The term "geomorphological assessment" is used in the generic specification in preference to the term "fluvial audit", to avoid the procedural connotations of the latter (procedures for which are laid down in existing guidance documents).

Natural England's viewpoint

This work has provided a technical basis for implementing the guidelines for the physical

restoration of SSSI rivers. The generic specification of geomorphological assessment and associated ecological interpretation will be a key document in establishing external contracts to assist with the development of restoration plans for individual SSSI rivers.

Selected references

Natural England (In draft) *Revised guidelines for the restoration of physical and geomorphological favourable condition on river SSSIs in England*. Natural England, Peterborough.

Natural England (2007) *Rationale for the physical restoration of the SSSI river series in England*. Natural England, Peterborough.

Further information

For the full details of the research covered by this information note see Natural England Research Report 013 *Geomorphological assessment of riverine SSSIs for the strategic planning of physical restoration*.

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