Yorkshire Dales Rivers Trust



www.yorkshiredalesriverstrust.com

More specific NFM information can be found at: www.yorkshiredalesriverstrust.com/natural-flood-management

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What is Fluvial Geomorphology?

Morphology: The form and function, how things are put together. **Geo**: The earth **Fluvial**: The movement of water.

Fluvial geomorphology is the study of the form and function of streams and the interaction between streams and the landscape around them.

Hydro-geomorphology: the study of landforms caused by the action of water.



Helps use design and understand river restoration techniques



Inappropriate restoration could have major impacts upstream and downstream



Can not consider the movement of Water and Sediment isolation



We can't decouple the river and the floodplain, MUST consider them as one



Some of our rivers are more reactive and responsive than others

What controls the characteristics of a river?



There are lots of ways to characterise river types:

WFD Classification: 18 Types

Generalisation: UK Rivers are subject to temperate climates, subjected to a subdued flow regime. Winter high flows, summer low flows with extreme flow events being rare.

Calcareous Catchments: Reduced flows and slow response to rainfall **Hard Rock Catchments**: Faster responding and more extreme peak flows

Composite Typology



Bedrock Channels



Cascades



Step-Pool



Braided



Wandering



Plane-Bed



Plane Riffle



Pool Riffle



Active meandering



Single Thread (passive meandering)



Activity: From the three interventions listed below:

- 1. Re-meandering
- 2. Weir removal
- 3. Dredging-specifically over widening

What might occur upstream and downstream as a response on a:

Single thread channel

I want you to think about:

Erosion, incision, deposition, velocity, bank stability

Common pressures



Common pressures

- Embankments
- Channel training
- Dredging
- Little riparian vegetation
- Incised catchments
- Shortened rivers
- Excessive erosion



How does this effect Natural Flood Management?