Developing a metric for Biodiversity Net Gain – Rivers and Streams

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Presentation Outline

- Ambition and status of the Defra metric.
- Approach to developing a Rivers and Streams Metric.
- Defining **Distinctiveness**, **Condition** and **Spatial Multipliers**.
- Relationship with Water Framework Directive Assessment.

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Approach

- Aspiration to include Rivers and Streams in the revision of the Defra metric.
- Commitment from Environment Agency / Natural England.
- Review existing metrics and assessment methods.
- Rivers and Streams offsetting strategies included within some major infrastructure and development proposals.
- Workshops June – August 2018 - Environment Agency/Natural England and Industry Sounding Boards.
- Deadline September 2018

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Key principles

- Linear feature.
- Habitat based.
- Conform to simplicity principal.
- Assess whole river processes (longitudinal, lateral and vertical processes).
- Reflect reach scale influence and character.
- Evaluate process-form interactions between the channel bed, banks, riparian zone and floodplain.
- Ensure that the riparian zone is accounted for as part of the Rivers and Streams metric.
- Ensure that connectivity/severance is considered at a sub-reach, reach and catchment scale.
- Ensure that the condition assessment would be easily adopted by industry and ecological practitioners

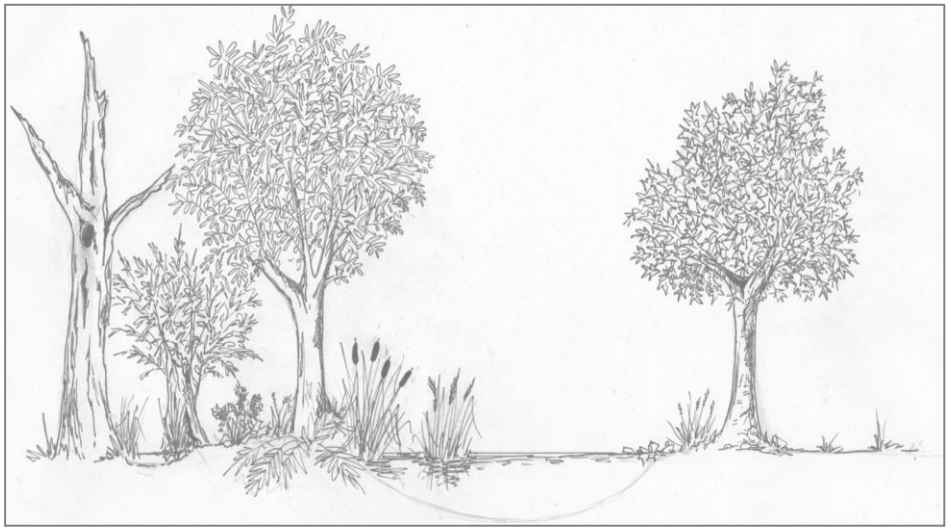

Illustration of riparian habitat.

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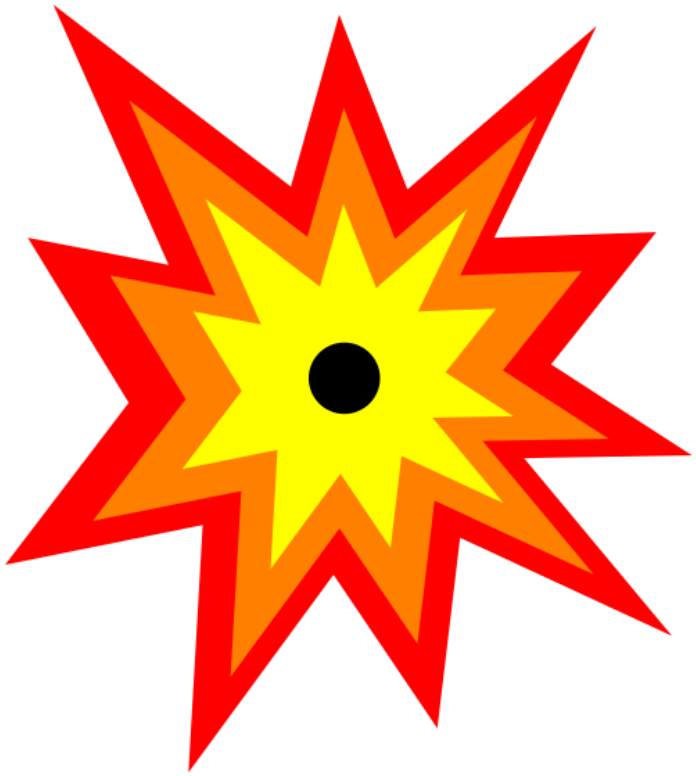
My key principal

- It can’t do everything!



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1. Riverine distinctiveness.

- By their nature – rivers have a high biological diversity.
- All Rivers are classified as ‘High Distinctiveness’.
- Include a ‘Very High’ classification Salmonid Rivers.
- Reflects ecology, habitat and economic value – not necessarily a species score.

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Very High Distinctiveness

- Salmonid Rivers are categorised within Water Framework Directive.
- Classification should be available January 2019. Incorporates ordinary water course and main river.
- Easily accessible - catchment data explorer.
- http://environment.data.gov.uk/catchment-planning/

Main River layer

Salmonid Layer

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2. Riverine condition

- Needs to consider River type (22 river types).
- Needs to assess: riparian, channel, bank face and marginal habitat.
- Needs to capture processes.
- Modular River Physical Survey - (MoRPh)

https://modularriversurvey.org/

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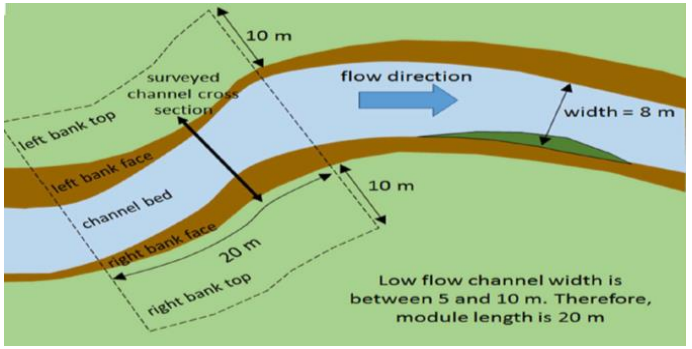
Modular River Survey

- Citizen Science approach - fits simplicity principal '*what you see, not what you know*'.
- Surveys 15 channel features including: channel, channel margin, riparian, marginal toe.
- Applies to 95% of rivers in UK (not channels ≥ 30 m).
- Physical character recorded.
- Morph units are defined by river size.



Layout of a MoRPh survey, Modular River Survey, 2018.

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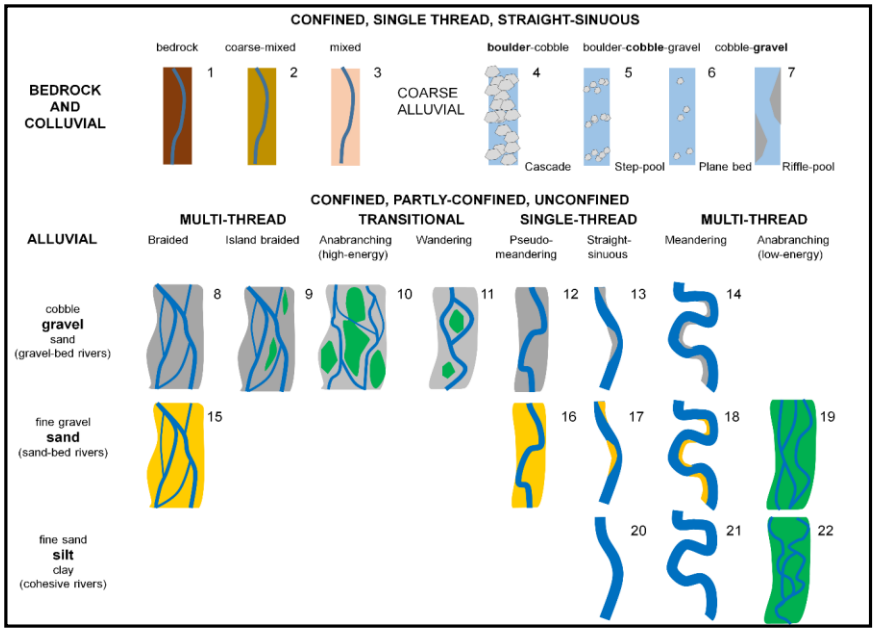
Modular River Survey Pro

Prof A.M Gurnell & Dr L. Shuker

- Needs adjusting to fit consultant led application.
- Output of weighting criteria: condition score 1 – 5.
- Reflects near natural natural state.



22 River Types in UK Rinaldi et al., 2016

Rinaldi, M., Gurnell, A.M., González del Tánago, M., Bussettini, M. and Hendriks, D., 2016. Classification of river morphology and hydrology to support management and restoration. Aquatic Sciences, 78(1): 17-33.

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Modular River Survey Pro

Hydro-MoRPh

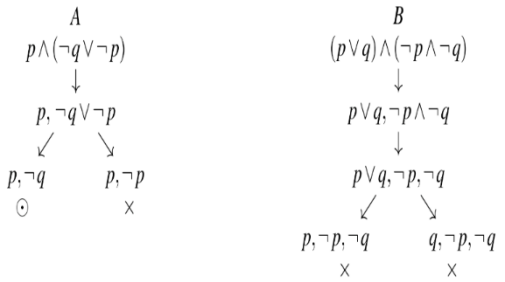
- Looks at the Reach scale.
- Classifies River Type.
- Desk based exercise.

Multi-MoRPh

- Assesses river processes at the Sub-Reach
- Consists of 5 MoRPh units
- Defines the hydro-geomorphological character.

Condition Classification

- Based on quality parameters expected for river type and degree of human modification.



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Riparian Zone

- Difficult to account for within the calculator
- not a defined habitat type
- measured in different units to linear features
- double counting
- Assess riparian habitat quality within the condition assessment.
- Calculate any impact/reduction of riparian habitat within river ‘units lost’.
- Reason – loss in **functionality of the river corridor.**
- To ensure no net loss / net gain, riparian improvements and in-channel enhancements can be considered.
- Low risk condition assessment can be used.

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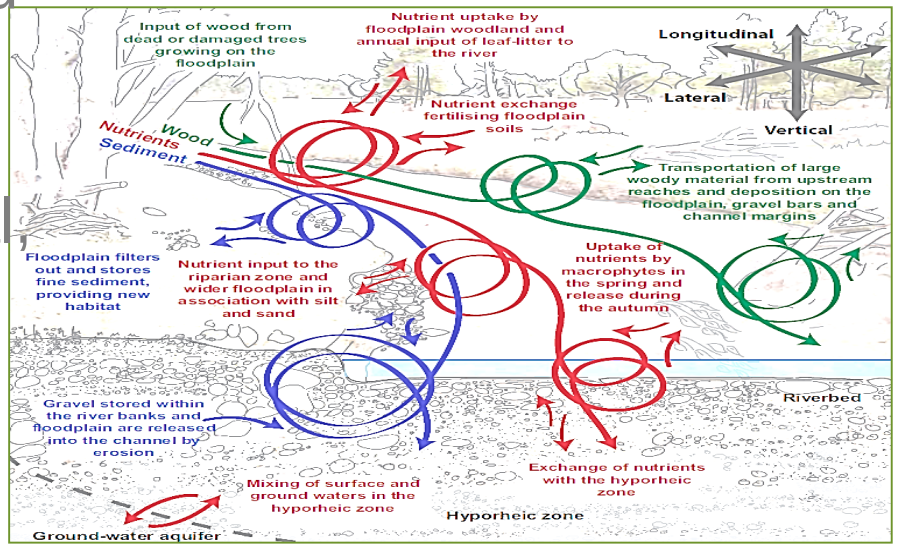
Quality Elements

- Connectivity:
- needs to account for reach and sub -reach scale.
- Needs to account for development risk – longitudinal lateral and vertical.
- Placemarker within metric – developed 2019.



- Spatial Location:
- reflects work in priority areas and accounts for distance of offsets.

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What would an offset be?

- Actions within the River Basin Plan/Catchment Planning System/Catchment Plans can be used as offsets. To be agreed with Local Authority and Environment Agency?
- Mitigation for WFD compliance can be used to account for ‘No Net Loss’ but not ‘Net Gain’ (needs to be additional to count as Net Gain, and not part of a statutory requirement).
- Future proofing? Need to consider what was planned for the river if the development hadn’t occurred.

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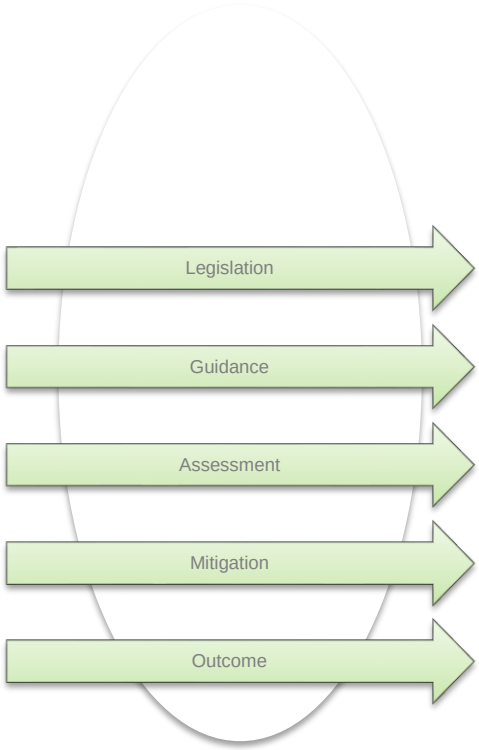
River Metric and Water Framework Directive



	Biodiversity Net Gain	Water Framework Directive
Legislation	England Biodiversity Strategy (2010)	European Directive (2000/60/EC), The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, No. 407
Guidance	Defra Metric, 2012.	WFD assessment 188_10 (EA)
Assessment	Loss of linear footprint. Habitat distinctiveness and condition assessed.	Impact of WFD status, WFD objective and quality elements including hydromorphology.
Mitigation	Within impact area, or can be outside but will be subject to a multiplier.	Within WFD water body.
Outcome	Net Gain	No deterioration to water body status and not preventing WFD objectives being met.

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Next steps

- Trial Modular River Survey Pro.
- Develop connectivity quality element 2019.
- Application.

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