Summary conclusions workshop "Hydromorphology and WFD classification", 12-13 October 2015, Oslo, Norway

Hydromorphological processes are a key component of fluvial ecology, as they create the hydrodynamic and habitat conditions to support biota. Pressure on hydromorphology is one of the most common causes for water bodies to fail the WFD environmental objectives.

There are many good examples of biological indicators responding to hydromorphological pressures.

- All biological quality elements may respond but the strength of the response depends on the choice of metrics.
- Fish, macrophytes, macroinvertebrates and (more rarely) diatoms are the biological quality elements most used to detect effects of hydromorphological pressures. Phytoplankton is used in specific cases (impounded rivers and reservoirs).
- Many of the intercalibrated WFD methods are generic multi-metric indices responding weakly to specific hydromorphological pressures because they were not originally designed to be specifically sensitive to such pressures. This can be improved by using more targeted indicators. There are already good examples of Member States using such targeted indicators in their biological assessment systems
- Hydromorphological pressures affect BQEs through morphological process shaping habitat quality and structure. Riparian vegetation usually plays an important role. There is a need to better characterize and quantify the links between hydromorphological alteration and biological impact using appropriate data and targeted indicators. This requires that spatial and temporal scales of monitoring of biological quality elements are in line with hydromorphological processes
- There is a need to quantify hydromorphological pressures and their effects on the biology under a multi-stressor environment in order to separate different causes of the alteration and to design appropriate measures.

River typologies should reflect natural variability in hydromorphological characteristics and processes. This is crucial because differences in natural hydromorphology result in different reference conditions for the biological quality elements.

BQE assessments need to be supplemented with information from the supporting elements in order to identify inconsistencies between hydromorphological and biological assessment, to diagnose problems and to identify effective restoration measures. A clear understanding of what is meant by "supportive element", how it should be used, how it is reported is needed.

Hydromorphological assessment is crucial for the designation of HMWB, the development of methods to quantify ecological potential, and for the design and monitoring of mitigation measures. It will not be possible to achieve this if information on hydromorphology is available for "high status" only.

Hydromorphological processes occur at different spatial and temporal scales. Hydromorphological assessment methods are needed to account for variations in time and space (multi-scale methods).

Until recently, there were few shared and standardized multi-scale hydromorphological assessment methods. This has been an obstacle for a proper analysis of the linkages with BQEs so far. Recent scientific work (including the REFORM project) has resulted in new and better approaches and tools, which could now be used and further standardised.

To achieve real progress on this topic it is necessary that experts on hydromorphology and biology need to work together at different levels – scientifically, within Member States, and also within the WFD common implementation strategy.

Data from remote sensing are increasingly available from many sources, including EU space programs. This data has a great potential to be used in hydromorphological assessments at different scales, in combination with field data and other existing relevant information. The main challenge is not data availability and acquisition, but to solve issues with data processing and interpretation.