

# Assessment of the hydromorphological condition of rivers for the Water Framework Directive



The River Habitat Survey (RHS) was used to guide the assessment of the hydromorphological condition of 800 rivers in Bulgaria for Water Framework Directive reporting. Contact RRC to find out more about this project!

## Why was RHS used?

RHS was adopted because it is a standard method used across Europe, the method is CEN compliant (CEN, 2004). RHS is also a cost-effective inventory-based field method designed to yield reliable information on hydromorphological quality elements for the Water Framework Directive.

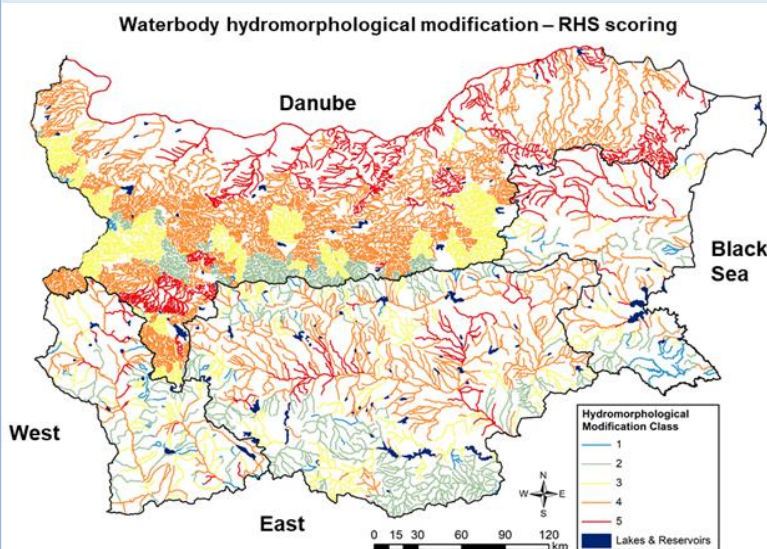
## What is hydromorphology?

Hydromorphology is 'the physical habitat constituted by the flow regime (hydrology and hydraulics) and the physical template (fluvial geomorphology)' (Orr et al., 2008).

## How was RHS used?

To survey 800 rivers in Bulgaria for Water Framework Directive reporting we developed a remote 'fly over' assessment to record hydromorphological modifications to rivers using Google Earth Imagery. We created a simplified RHS form and used categories in the RHS survey, such as bank and bed modifications, number of weirs etc. and captured the extent of these modifications (e.g., none, present extensive) for pre-defined reaches across the river network. This was a simplified version of the RHS but allowed indices such as the Habitat Modification Score to be calculated for the entire river network rapidly with available remote datasets.

River Habitat Surveys were then completed in Bulgaria on over 100 river sites to capture the hydromorphological condition of the rivers. This information was used to help validate the remote fly over surveys. There was good agreement on the hydromorphological condition identified in the field and in the remote fly over surveys and most fly over assessments of RHS semi-natural sites were semi-natural or predominantly unmodified when surveyed in the field.



Hydromorphological modification to river surface waterbodies in Bulgaria, where 1 = near- natural, 2 = slightly modified, 3 = moderately modified, 4 = extensively modified, 5 = severely modified.

## Outputs

The map to the left shows the hydromorphological modification scores of the 800 waterbodies surveyed using the remote fly over approach. In Bulgaria, 11% of waterbodies are in near-natural condition, 23% of the waterbodies are slightly modified, 19% of waterbodies are moderately modified, 33% are extensively modified and 14% are severely modified.

This data can be used for WFD reporting and to support river restoration and improvement works.