University of Agriculture in Krakow,
Faculty of Environmental Engineering and Land Surveing

Department of Hydraulic Engineering and Geotechnics

NUMERICAL MODELING OF WATER FLOW CONDITIONSWITH SPATIAL DISTRIBUTED BOULDERS IN MAIN CHANNEL

Leszek Książek, Maciej Wyrębek, Mateusz Strutyński, Agnieszka Woś

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The Upper Vistula River Basin – historical spawning area

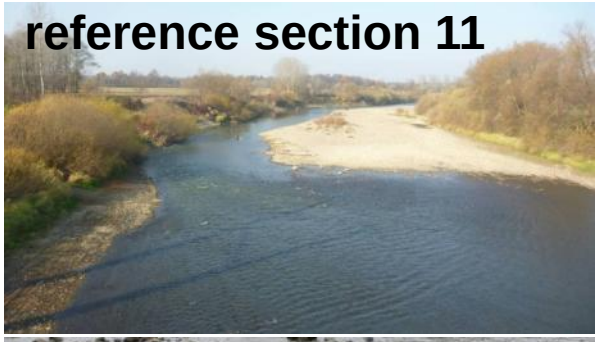
Channel incision: during the 20th century: riverbed elevation lowering from 2 to 4 meters

RIFFLE – POOL sequence transformation

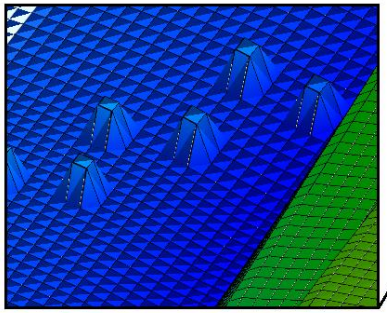
Abundance of fish species:
the turn of the century XIX i XX – 35 fish species, 70's XX – 25; 2002 – 22; 2011 – 33 (Fish stocking).

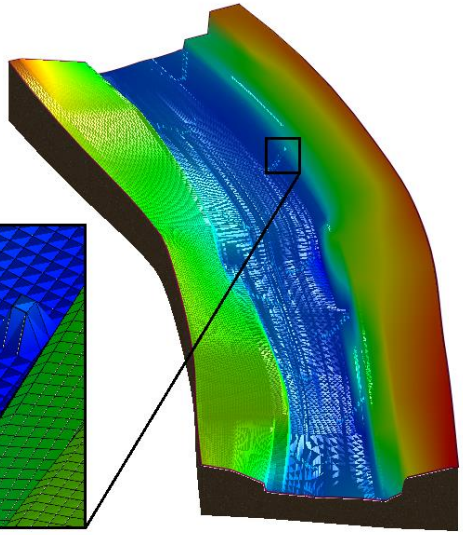
Reophile fish – needs fast moving, well-oxygenated water and gravel surfaces:

Diadromous fish travels from the Baltic Sea into river's spring sections to spawn:



The aim: to assess the hydraulic conditions of flow around spatially distributed boulders structures deposited in the bed of the main channel





CCHE2D is a 2D, depth-averaged, unsteady, sediment transport and water quality model.
The model has been verified and validated using a variety of test cases.

CONDITION
- safety passage of flood,
- does not disturb the terms of use of water


The Wisłoka River, Dębica, below weir,
section 07, July 2014
Water depth ≈ $h_{1\%}$