



## **Methods to assess patterns of the transport and deposition of large wood in a wide mountain river: experiences from the Czarny Dunajec River, Polish Carpathians**

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Recognition of the temporal and spatial patterns of the recruitment, transport and deposition of large wood in wide mountain rivers is crucial for maximizing ecosystem benefits and mitigating potential flood hazards resulting from the presence of wood in the rivers. A variety of methods can be used to explore these processes, such as tracing or modelling wood dynamics. However, high mobility and relatively long transport distances of large wood as well as considerable channel and floodplain sizes make tracing individual wood pieces in such rivers especially challenging. We combined different approaches to establish patterns of wood dynamics in the fifth order Czarny Dunajec, Polish Carpathians: (i) large wood inventories after major flood events, (ii) long-term observations of the fate of living willow driftwood, (iii) numerical modelling of large wood transport, deposition and remobilization under steady and unsteady flood flows of different magnitude, and (iv) tracking logs tagged with radio transmitters during a 20-year flood. These methods were applied in a part of the river with considerable differences in morphology and the type of channel management, but with similar values of flood discharges. We discuss advantages and limitations of these study methods and present examples of the patterns of wood dynamics in the river revealed with their use. Integration of observations and inferences derived from the use of the different methods can greatly enhance the knowledge of large wood dynamics in this and other wide mountain rivers.

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