

Name	Job Title	Area of Expertise
TANAKA Wataru	Assistant Professor	River Engineering, Biology
1. Main Research Topic (1) Elucidation of the Relationship Between the Causes of Riverbed Topography at River Confluences and Biodiversity Based on the confluence angle and tributary flow, we predict the factors that cause riverbed topography at river confluences. We also clarify the relationship between biodiversity at confluences and riverbed topography and elucidate the relationship between confluence conditions and biodiversity potential. Specifically, we investigate the formation of temporary water bodies unique to confluence points after floods, which can occur due to differences in flow rates between the main river and its tributaries. Since these temporary bodies of water are utilized by fish for spawning, we are also examining their impact on biodiversity. (2) Hydrological and biological evaluation of traditional flood control methods: Traditional flood control methods used in Japan before the spread of modern engineering technology have withstood forces beyond expectations and are expected to be effective against the recent increase in severe disasters. We are evaluating the effectiveness of these methods and clarifying their impact on organisms compared to modern methods. (3) Small-scale natural restoration of three-sided concrete rivers and rock-bed rivers: Historical records and satellite imagery reveal that, following the 1982 Nagasaki Flood Disaster, river renovation using three-sided concrete rivers was carried out as part of the recovery efforts in Nagasaki City. Three-sided concrete sections and rock-bed rivers are prevalent in Nagasaki and tend to have monotonous environments, which reduces the diversity and abundance of organisms inhabiting them. Therefore, we are developing small-scale natural restoration methods for typical three-sided concrete rivers and bedrock-exposed rivers in Nagasaki. Specifically, we are installing permeable barriers called “barb structures” and monitoring their progress, as well as monitoring structures where the barriers themselves are formed by plants to automatically trap sediment while adjusting the barrier height.   Wand formed at the confluence point Waterfront environment restoration by barb structures		
2. Keywords Flood disturbance, biodiversity, natural regeneration, aquatic ecology, ground beetle ecology		
3. Remarks and Websites Others • Relationship between flood disturbance and species diversity of wandering beetles • Elucidation of material cycles in floodplains and the sea etc. researchmap: https://researchmap.jp/susuma Laboratory: https://www.cee.nagasaki-u.ac.jp/~suiken/		