North Dakota Water Resources Research Institute (NDWRRI) Seminar Series

River Systems: Hydro-morphodynamics, Ice Processes, and Fish Habitat

Dr. Colin Rennie, University of Ottawa, Canada

Date and Time: Mon. 11/24/2025

3:30 - 4:30 PM (CST)

Via Zoom, Meeting ID: 995 0056 5246 Passcode: 920171

https://ndsu.zoom.us/s/99500565246

Abstract:

In this talk, Professor Rennie will provide an overview of his research programme. He pioneered use of Acoustic Doppler Profilers (ADCPs) for measurement of bedload transport; he will summarize this technique and how it has been used to map bedload transport in rivers ranging from meandering sand-bed to braided gravel-bed. He has also developed methods to measure and visualize 3D flow fields in rivers ranging from clay-bed meandering creeks to rock canyons. These field measurements have informed numerical models and have improved understanding of river hydro-morphodynamics. Innovative field measurements and modelling have also provided insight into river ice cover dynamics. Lastly, in collaboration with fish and evolutionary biologists, he has utilized these techniques to understand how fish utilize available habitat and respond to channel disturbances such as sediment transport, hydraulic structures, and flood flows.

Speaker biography:

Colin Rennie is Professor of Civil Engineering at University of Ottawa, Canada. His expertise is in river engineering, with particular emphasis on field measurements and modelling of channel hydro-morphodynamics, ice processes, and fish habitat. He has been invited as a visiting professor to research morphodynamic processes in rivers around the world, including New Zealand, Switzerland, Spain, China, Belgium, and Italy. He has more than 300 research publications, with papers in top journals including Nature. He is a Fellow of the Canadian Society for Civil Engineering and an Associate Editor of the Journal of Hydraulic Engineering (ASCE).