Field and laboratory assessment of turning pool hydraulics in a vertical slot fishway relative to fish passage. \*A Marriner­­­­a, A.B. Baki­­­­a, D.Z. Zhu­­­­a, J.D. Thiemb, S.J. Cooke­­­­­­­­­­­­­­­b, C. Katopodisc. aDepartment of Civil and Environmental Engineering, University of Alberta (marriner@ualberta.ca); bFish Ecology and Conservation Physiology Laboratory, Carleton University; cKatopodis Ecohydraulics Ltd.

The hydraulics of turning pools in vertical slot fishways were studied in the field and using CFD modelling. The velocity field results from measurements of two turning pools at the Vianney – Legendre vertical slot fishway in southwestern Quebec are presented. Additionally, 9 turning pool designs were simulated using CFD modelling. Velocity, turbulent kinetic energy, and vorticity were simulated in at depths of z= 0.13*h*, 0.5*h*, and 0.8*h* for all designs. Designs 2 and 5 produced hydraulics very similar to Design 1. Velocity, turbulent kinetic energy, and vorticity results were found to be comparable to single slot pools in vertical slot fishways. The maximum slot velocity measured in all pools is less than the theoretical burst speed of wild adult lake sturgeon and should not hinder upstream passage. The average volumetric energy dissipation is lower than the maximum acceptable level suitable to fish passage and similar to levels found in single slot pools. Flow turbulence is lowest close to the pool floor and therefore fish swimming close to the bottom will encounter lower levels during ascension. The turbulence is 'high' in the slot area and typically 'low' throughout the remainder of the pool in all designs. Vorticity is highest at the slots and lower through the rest of the pool.

🡪Preference is a **presentation**.