

Eco-hydraulics for Sustainable Hydropower

David Z. Zhu

Department of Civil and Environmental Engineering, University of Alberta, Canada

(*E-mail: dzhu@ualberta.ca)

Abstract

In this talk, I will discuss recent research development on eco-hydraulics related to sustainable hydropower. I will first talk about our research work on assessing fish entrainment risk related to dam intake operations for run-of-the river dams as well as deep dams. The effect of temperature stratifications on fish entrainment will be discussed. This will be followed by our current research on predicting and mitigating the generation of supersaturated total dissolved gases caused by dam spill events. The upstream migration of fish through vertical slot fishways and fishway hydraulics will then be discussed. Our recent study on the hydraulics and design of nature-like fishways using rock ramps will then be summarized.

Biography

Dr. David Zhu is a Professor in the Department of Civil and Environmental Engineering at the University of Alberta, Canada where he has been a faculty member since 1997. He is a Fellow of Canadian Academy of Engineering, the Canada's NSERC Industrial Research Chair in Urban Drainage. His research focuses on sustainable hydropower power and sustainable urban drainage. He has published over two hundred SCI journal papers. Dr. Zhu received a number of national and international awards for his research work: including CSCE Dagenais Award for outstanding contributions in hydrotechnical engineering in Canada, ASCE 2017 Samuel Arnold Greeley Award, and 2018 Karl Emil Hilgard Prize. Dr. Zhu completed his PhD at the University of British Columbia and his BSc at Shanghai Jiaotong University.

