Investigating the Use of Science in Decision Making

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The Role of Science in Decision Making

Over the next decade, nearly 25 percent of active hydropower projects nationwide will require relicensing by the Federal Energy Regulatory Commission (FERC). Making informed decisions about hydropower operations and management during relicensing requires the production and use of good information. Under many laws, including The Endangered Species Act, Magnuson-Stevens Act, and Clean Water Act, agency regulators are charged with using the best available science to make decision that may affect the ecosystems and local economies shaped by hydropower dams. Though the use of best available science can affect how decisions are made, this term is not always well-defined.

Research Summary

This research uses citation analysis methods and a structured survey of federal and state resource agency stakeholders to investigate the use of best available science in relicensing decisions. Our purpose is threefold: (1) to enhance our understanding of how agency stakeholders define best available science, (2) identify the informational sources used in relicensing decisions, and (3) to assess agency perceptions of how information is used in this context. We focused our efforts on dams located in the Kennebec and Penobscot River Watersheds in Maine.

West Enfield Dam in Maine's Penobscot River. Photo Credit: Zydlewski Laboratory.

'Literature cited' and 'reference' sections were identified from official relicensing documents. Citations often serve as 'evidence' supporting an author's viewpoint and stance in decision-making. Citations were coded by the type of document they represented (e.g., peer-reviewed, federal, state, and industry literature) and by date of publication. Patterns were explored, looking at how different stakeholders used different types of information. Our analysis showed that Federal agencies cited peer-reviewed literature twice as often as FERC and

dam licensees. Furthermore, FERC adopted licensee information and reasoning more often than not.

Document analysis was followed by an online questionnaire to further explore patterns of agency decision-making from the unique perspective of the individual stakeholders involved. The questionnaire was sent to federal and state resource agency members in the state of Maine and New England. Collection of responses is ongoing and will end in late January 2019.

Presentations

Vogel S.K., Jansujwicz J.S., Zydlewski J.D. Evaluating the construction and use of "best available science" in hydropower relicensing. Talk presented at: 148th Annual Meeting of the American Fisheries Society. 2018 Aug 19-23; Atlantic City, NJ.

Vogel S.K., Jansujwicz J.S., Zydlewski J.D. Fish passage at hydropower dams on the Penobscot and Kennebec Rivers: a content analysis of the FERC eLibrary Database. Talk presented at: Maine Sustainability and Water Conference. 2018 Mar 29; Augusta, ME.

Vogel S.K., Jansujwicz J.S., Zydlewski J.D. Fish passage at hydropower dams on the Penobscot and Kennebec Rivers: a content analysis of the FERC eLibrary Database. Talk presented at: Atlantic Salmon Ecosystem Forum. 2018 Jan 17-18; Orono, ME.

Vogel S.K., Jansujwicz J.S., Zydlewski J.D. Hydropower and fisheries: agency decision making in the FERC relicensing process. Poster presented at: 147th Annual Meeting of the American Fisheries Society. 2017 Aug 20-24; Tampa, FL.

Researchers

Sarah Vogel is a M.S. student in Wildlife Ecology in the Department of Wildlife, Fisheries, and Conservation Biology at the University of Maine. Her work centers on investigating the decision making aspect of dam relicensing as it relates to FERC-regulated hydropower projects in Maine.

Jessica Jansujwicz is a Research Assistant Professor in the Department of Wildlife, Fisheries, and Conservation Biology and a Faculty Fellow at the George J. Mitchell Center for Sustainability Solutions at the University of Maine. Her research focuses on the human dimensions of natural resources, with an emphasis on stakeholder engagement in conservation planning.

Joseph Zydlewski is the Assistant Unit Leader (Fisheries) of the USGS - Maine Cooperative Fish and Wildlife Research Unit and Professor of Fisheries Science in the Department of Wildlife, Fisheries, and Conservation Biology at the University of Maine. His work centers on the study of fish movements and migrations including connectivity and river restoration.

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