

Systematic river restoration planning

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Abstract. “Working rivers” provide societal needs like drinking water, industry, and agriculture. Our use of rivers has led to disruptions in the delivery of water, sediment, and nutrients and globally degraded water quality and biodiversity. To balance many social and environmental needs, strategies for river restoration integrate ecology-based predictive models and uncertainties with socio-economic models. We present a synthesis understanding of decision support methods that underpin contemporary systematic river restoration planning and management. Popular methods integrate hydro-ecological models with decision science methods like mathematical optimization and decision analysis. We use these methods in conjunction on a catchment-scale river restoration planning project in Australia.