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# Building a framework for adaptive management of an invasive species

Estimates of population spread and growth rates are fundamental to identification of optimal allocation of invasive species removal effort. Novel insights into invasive population dynamics can be gained from spatially-structured removal and monitoring data collected during a removal effort. In this study, we evaluated the degree to which different monitoring data streams influence management outcomes based on their ability to inform the decision-making process through estimates of the rate of growth and spread of rusty crayfish in the John Day River, a major tributary of the Columbia River. We built an integrated population model to simulate rusty crayfish population dynamics within the context of an adaptive management framework and evaluated the efficacy of potential monitoring and analysis strategies in promoting informed decision making and favorable management outcomes. We assumed a fixed budget for monitoring and management and simulations were run over a fixed time frame. At the end of each simulation, the number of individuals remaining on the landscape and total river length occupied was assessed. We found that integrating all available monitoring data streams produced the best management outcome and most accurate abundance measures.