

Point Estimate Transfers in Ecosystem Services Research: Applying Principles from Economics to Improve the Transfer of Ecological Production Estimates

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There is increasing demand to describe and account for the benefits that humans derive from ecosystem functions in decision-making. Comprehensive descriptions of these benefits, referred to as ecosystem services (ES), and their production can be limited because there is limited knowledge about the service/s in question, or there is limited knowledge about the service for the context (i.e., location, ecosystem type, scale) in which the ES is being measured. In particular, quantifying multiple ES for a given context is often difficult due to the quantity of multidisciplinary data and information that is required. In part, this creates a demand to directly apply existing models and estimates of ecological production, even though the context of the estimates often varies. While methodologies exist to facilitate and analyze the transfer of economic value of ES (e.g., benefits transfer), there is no analogous formalized process to transfer ecological data underlying ES production. As a result, estimates of ES production are transferred with little to no identification or analysis of uncertainties, either associated with differences in context or error associated with the original estimate. We propose that concepts from benefits transfer can be applied to make the transfer of ES production estimates more transparent and consistent. Our objectives are three-fold: to develop a framework for assessing the transferability of ecological information that relates to ES production using ideas from economic benefit transfer; test the utility of said framework with case studies of coastal ecosystem services; and ultimately produce guidance on how to perform transfers.