

Indirect, unexpected, and unintended: expanding research programs for supporting actions towards ocean sustainability

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Abstract

While predictive models have helped scientists evaluate drivers of change as well as explore scenarios, they often fall short of effectively planning and evaluating interventions towards desired changes. Global change variables often impact environments in indirect ways that are often not fully appreciated in ex ante methods (i.e. predictive methods). Effects of global change can also generate unexpected results that are not anticipated with predictive models, such as when global change variables interact with human development and generate disaster events. Finally, interventions intended to change outcomes often have unintended consequences, particularly where they redirect impacts or change dynamics. In this talk I argue that for science programs to effectively contribute to actions and solutions requires pairing classic ex ante approaches with ex post evaluation approaches. That is, instead of thinking of sustainability as a field of research about understanding mechanisms of change, sustainability is as much about implementing and evaluating phenomena of interventions. Drawing from insights in health science and development studies (i.e. fields that are interventions based), I outline key questions to shape a research program based on evaluating interventions. Addressing these questions will require methods that can help determine if desired outcomes were met, whether a particular intervention caused desired outcomes, and whether the intervention created unintended outcomes. In order to use science to help inform desirable change towards sustainability, science needs to be employed to help determine what interventions work, how they work, and in what contexts.