Governing complex commons: the role of communication for experimental learning and coordinated management.

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Abstract

Accomplishing sustainable governance of ecosystems where a multitude of actors have different stakes poses a tremendous challenge. It is increasingly recognized that the complexity of this challenge arises from the dynamics of the ecosystems themselves, from the dynamics of the institutions involved, as well as from the interactions of these dynamics. In this paper, we build on adaptive management and common pool research to further increase our understanding on if and how communication between resource users affects their joint ability to learn about and manage complex ecological resources over time. More specifically we will study the role of user communication in relation to learning through continual experimentation, when managing a complex resource system involving resource interdependencies, which to our knowledge is a first attempt. For this purpose we design a laboratory experiment where we test the effect of user communication in an experimental setup with two ecological interdependent resources and where access to these resources is asymmetrical (whereas some groups have access to both resources, other groups only have access to one of the resources). Our experimental results indicate that communication is more multifaceted than what previous experimental studies suggest. We do confirm that communication can strengthen group identity and build trust among the resource users (which is crucial for successful management), and that also applies when resource access is asymmetrical. However, when managing a complex social-ecological system where the resource dynamics entail complexities and uncertainty, knowledge and understanding of the system is as crucial for successful management. We show that in communicating groups that can share information and therefore has access to more data points, the likelihood of a successful resource management increases, especially in earlier time periods. Our results also suggest that when the first uncertainties about the system are sorted out, this positive management effect of communication is much less pronounced. However, sustained communication over time seems to stimulate fine-tuning of management through experimental. In this study we use the experimental method not only to test certain hypotheses, but also in a more exploratory hypothesis-generating sense. We hypothesize for example that the potential effect of communication on groups’ willingness and ability to understand the system through experimental

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sciencesconf.org:resilience2014:24872
learning could have significant implications for the long-term capacity to adaptively manage
dynamic and interdependent resources. We also hypothesize that the need to gain a basic
understanding of the resource dynamics overshadows the asymmetry in resource access and
potential conflicts that may arise from these, but that this effect may diminish once a basic
understanding has been achieved, after which more attention is drawn to sharing rules and
norms.

Keywords: Social, ecological systems, Common pool resources, Adaptive Management, Collective
action, Network, Learning, Decision, making