

# Ecological interdependencies and resource competition: The role of information and communication in promoting effective collaboration in complex management situations.

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## Citation

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## Creator/Principal investigator(s)

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## Research principal

[Stockholm University](#) - Stockholm Resilience Centre

## Description

Communication between resource users has repeatedly been shown to be of significant importance in environmental management. The proposed causal mechanisms are numerous, ranging from the ability of users to share information to their ability to negotiate solutions to common problems and dilemmas. However, what is less known is under what conditions these potential causal mechanisms are important and if, in cases when different means other than communication were available, whether they would be more effective in accomplishing these objectives. An example of such an alternative could be that instead of (or in addition to) users being reliant on within-group communication to acquire useful information an intermediary - such as a public agency - could provide that for them. Furthermore, the different causal mechanisms making communication beneficial might not be independent, neither in respect to each other, nor in respect to other externally imposed means to facilitate better environmental management, and not in regards to different contextual factors. This study makes use of laboratory experiments in an innovative way to explore these questions and specifically test the relative importance of communication in managing complex social-ecological system characterized by common-pool resource dilemmas, ecological interdependencies, and asymmetric resource access - all characteristics being present simultaneously. We find that when resources users are confronted with such a complex challenge, the ability to communicate significantly increases individual and group performance. What is more surprising is the negative effect on overall outcomes that providing external information has on outcomes, when the users also have the ability to communicate. By analysing the content of the conversations we are able to suggest several possible explanations on how the combination of external information provisioning and user communications act to increase individual cognitive load and drives intra-group competition, leading to a significant reduction of individual and group outcomes.

Behavioural experimental results, per round for the different treatments. All messages are coded (see published paper)

**Language**

[English](#)

**Time period(s) investigated**

2015-01-01 – 2016-12-31

**Variables**

26

**Data format / data structure**

[Numeric](#)

[Text](#)

**Geographic spread**

Geographic location: [Stockholm County](#)

**Responsible department/unit**

Stockholm Resilience Centre

**Funding**

- Funding agency: The Swedish Research Council Formas

**Research area**

[Earth and related environmental sciences](#) (Standard för svensk indelning av forskningsämnen 2011)

[Social sciences](#) (Standard för svensk indelning av forskningsämnen 2011)

[Environment](#) (INSPIRE topic categories)

**Keywords**

[Administrative units](#), [Common-pool resources](#)

**Publications**

Osborne M, Sundström E, Bodin Ö (2019) Ecological interdependencies and resource competition: The role of information and communication in promoting effective collaboration in complex management situations. PLOS ONE 14(12): e0225903. <https://doi.org/10.1371/journal.pone.0225903>

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17.24222183, 60.15305328

17.24222183, 58.85888672

19.08222198, 58.85888672  
19.08222198, 60.15305328  
17.24222183, 60.15305328

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Data are freely accessible

### **Use of data**

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### **Versions**

Version 1.0. 2019-11-29

### **Contact for questions about the data**

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