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## Social capital and governance: a social network analysis of forest biodiversity collaboration in Central Finland

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### ABSTRACT

Collaboration between different actors is crucial for responding to the acute need for forest biodiversity conservation. Network theories highlight the importance of information sharing, social cohesion and mutual goals that constitute social capital. We test and demonstrate how these ties relate to each other and which ones are crucial for collaboration in a government funded collaborative network for forest biodiversity and Siberian Jay conservation in Finland. Our analysis shows that short-term governance networks operate on trust. Seemingly, differences in goals can be put aside for a collective good; that is, being able to cooperate and find solutions to conservation issues. Additionally, exchange and flow of information are a necessity in network functions. However, a network may be successful despite difficulties in flow of information, as our case of Siberian Jay Network shows. Using both qualitative and quantitative evidence, our analysis serves as a test for the usefulness of social network analysis method in bringing depth to understanding of both formal and informal governance networks.

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### 1. Introduction

Collaboration between different actors is generally considered crucial for developing legitimate and sustainable forest biodiversity conservation policy. Although the understanding of the importance of collaboration and social capital in conservation is growing (Pretty, 2003), the knowledge about the functions of collaboration and the subsequent structure of the collaborative networks remains an important empirical challenge. In a situation where biodiversity conservation is outsourced to networks crossing levels and sectors (Jordan and Lenschow, 2010; Young et al., 2012), we need to understand what the collaborative networks consist of and what keeps them working towards the intended goal. Network theories inform us of the importance of information sharing, social cohesion and mutual goals (Powell, 1990; Rhodes, 1997; Innes and Booher, 1999). Whether these are indeed the factors that the targeted government supported networks possess or have the potential to harness needs to be assessed empirically. It is important to understand how the ties of information sharing, trust and shared interests relate to each other and which ones are crucial for collaboration.

In this paper, we analyze the structure of a collaborative network that aims to advance forest biodiversity conservation in Finland in a context where the need for conservation is pressing. The traditional

use of forests for timber production has until recently been in conflict with any conservation efforts and more collaborative approaches are sought for. Through this case, we test and demonstrate the usefulness of social network analysis (SNA) method in bringing depth to the understanding of state-funded collaborative network governance.

Targeted support and external resources invested in collaboration can contribute to the development of networks and accumulation of social capital (Wolf and Hufnagl-Eichiner, 2007; Mandarano, 2009). Information sharing is a key to advancing sustainability although it can importantly vary across the network (Crona and Bodin, 2006; Wolf and Hufnagl-Eichiner, 2007; Saarikoski et al., 2012). The general postulate is that a range of forms of collaboration across public and private sector boundaries generate new potential for learning, adaptation, and social capital in sustainable natural resource management (Cashore and Vertinsky, 2000; Folke et al., 2005; Fernandez-Gimenez et al., 2008). Additionally, balancing interests and increasing commitment to ecological sustainability are considered important reasons for advancing collaborative governance (Conley and Moote, 2003; Primmer and Kyllönen, 2006). With these optimistic expectations, collaborative governance has an important role in the mix of conservation policies (Howlett and Rayner, 2007). The need to develop collaborative governance is accentuated because of the shrinking government funds (Young et al., 2012) and the aggravating biodiversity concerns (Hooper et al., 2012).

Responding to the acute need for increased forest biodiversity conservation in Finland, the Finnish government has sought for new ways of engaging the actors making decisions about the use of non-industrial private forests (Paloniemi and Tikka, 2008; Primmer et al.,

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2013). These non-industrial private forests, covering two thirds of the country, are traditionally managed for timber production. In the area where non-industrial private forests dominate, the protected area coverage is as low as two percent of forest land. As a concrete way of engaging public sector and non-governmental forestry and environmental organizations as well as land-owners in a collaborative effort to conserve biodiversity, the Finnish Ministry of Agriculture and Forestry has funded projects of cooperative networks for forest conservation since 2004. The cooperative networks aim at increasing forest conservation on private lands in cooperation with a wide range of different forestry and conservation actors.

Based on earlier experiences of similar networks in Finland, the financial boost and momentum can increase the information exchange and trust among the actors (Primmer and Keinonen, 2005; Primmer, 2011). Additionally, successful collaboration can mobilize the power that the actors possess or that they can accumulate together towards advancing mutual interests (Saarikoski et al., 2012). Enhancing these ties of information sharing, trust and mutual interest can contribute to the outcome of the collaborative effort. However, as the collaborative natural resource governance literature shows, the degree to which sharing information, trust and interests coincide is not well understood.

A systematic method for measuring and analyzing the ties in a network is social network analysis (SNA, Hirschi, 2010; Wasserman and Faust, 1994; Borgatti et al., 2009). SNA allows studying the interconnectivity of different actors in social processes. Conceptually and methodologically, SNA focuses on the relational characteristics of social phenomena as well as the subsequent behavioral patterns. SNA has been applied in natural resource management; for example in analyzing fishermen as coastal resource managers (Crona and Bodin, 2006), forest owner communication in timber sales (Korhonen et al., 2012), social learning in rural planning (Larsen et al., 2012), and collaborative network structures contributing to social capital (Mandarano, 2009).

In this article, we analyze the structure of a cooperative network for forest conservation utilizing SNA tools and survey data from a forest biodiversity conservation network. We use exploratory SNA to describe the network positions of individual organizations and the macro-structure emerging from organizations independently establishing contacts in the network. We compare three measures of network ties: information, trust and goals as well as their effects in the network.

Our research questions are (i) What kind of connections and which actors dominate the forest conservation network? (ii) In what kind of connections are information and knowledge exchanged? (iii) What kind of connections foster trust in the network? (iv) What kind of shared goals form coalitions in the network? (v) How do the different types of ties coincide?

Our aim is to gain a thorough understanding of the social connections and relationships in government supported organizational networks in a setting where the history of cooperation is short and the network is seen as a new and effective way to govern forests. More generally, our analysis sheds light on how networks contribute to conservation governance.

### 1.1. Forest conservation networks

Finnish forest biodiversity policy is faced with the challenge to stop the continuous biodiversity decline while maintaining legitimacy among the private non-industrial owners who dominantly own those forests where the conservation void is large (Syrjänen et al., 2007; Paloniemi and Tikka, 2008). To address this challenge, a number of different policy instruments have been designated under a National Forest Biodiversity Programme that runs at least until 2016 (METSO, 2008). The program and its instruments have originally been developed jointly by the Ministry of Agriculture and Forestry (MoAF) and the Ministry of the Environment (MoE) through a lengthy working group process that has included researchers, land-owners and environmental NGOs in the early 2000s. One of the instruments, financed by the Ministry of

Forestry and Agriculture has channeled support to seven cooperative networks during the years 2009–2012, following a pilot during 2003–2007. As the results from the pilot project allowed the network organizations to find new ways to cooperate and share information (Primmer and Keinonen, 2005; Primmer, 2011), the new funding also aimed at generating these types of intermediate outcomes for conservation. The networks are dependent on governmental funding, that is, they rarely continue to work actively after funding ends.

One of the seven funded networks was built around an idea to protect habitats in the last remaining territory for Siberian Jay in Central Finland. Siberian Jay is a taiga forest bird species that is increasingly endangered in its southernmost territory. The territory is fast receding north because old spruce forests are becoming fragmented by logging and land use change (Laita, 2012). The Siberian Jay Network was initiated and established by the largest nature conservation NGO in Finland, the Finnish Association for Nature Conservation (FANC; Suomen Luonnonsuojeluliitto SLL) as a response to a call by the MoAF. The basis of the network existed before funding was applied for. The application was written together with FANC and its local associations, local ornithology associations, regional forest center and regional environment center. After the network received funding, local and regional forest owners' advocacy organizations, logging companies, scientists (other than) and National Forests and Park Service joined the network. The network also cooperated with national hunters' organization later on. The chairman of FANC played a key role as the leader of the network; he organized all the network meetings, field days and other activities. He had also participated in mapping suitable Siberian Jay territories for conservation.

The Siberian Jay Network received funding from November 2009 till December 2011. During its operation, the network started forest nature management projects and conserved approximately 1000 ha of Siberian Jay forests in Central and Eastern Finland. As a concrete output, the network produced a brochure about Siberian Jay for private forest owners and a guideline for management for forestry and conservation professionals. The network joined actors that had previously not worked together for a shared goal on forest conservation, including environmental NGOs, forestry professionals and a national forest owners' advocacy organization.

## 2. Collaborative governance and social capital

Social capital is generally thought of as a key component in building and maintaining democracy (Putnam, 2000). Social capital “refers to connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 2000, p. 19). This classic social capital definition, originating from Coleman (1988) defines three key components for social capital: trust or the expectation and obligations of informal relations, information channels, and norms with effective sanctions.

The conceptualization of social capital as a set of vaguely related activities has been criticized (Fischer, 2005). The interpretation of social capital as participation in specific activities remains hard to justify, but the idea of social connections that a person or an organization is able to draw upon has maintained credibility in empirical tests. While community is hard to measure empirically, networks that support specific tasks can be singled out, which points to a network interpretation of social capital (Kadushin, 2012, 164–165).

As sociologists have begun to focus on social capital in networks, political scientists have started to theorize on new aspects of political decision-making. Instead of government steering, policy is considered to require multiple actors and a broad collaborative interpretation of governance requiring networks of autonomous individuals and organizations (Rhodes, 1997; Stoker, 1998; Koopman, 1993).

The confluence of these two traditions is obvious, generating a solid theoretical basis for governance networks and social capital (e.g. Lowndes and Wilson, 2001). Governance networks are seen as generating political opportunity structures, possibly with governmental

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