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How are forest owners' objectives and social networks related to successful conservation?



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ABSTRACT

In sustainable rural development, national and international policies are interpreted and implemented through local networks and involvement of local actors with various backgrounds, needs and objectives. We explored how forest owners' land management and biodiversity conservation objectives, as well as social capital embedded in their social networks were related to success in nature conservation, i.e., voluntary conservation contracts made as a part of the Forest Biodiversity Program for Southern Finland. The survey data of forest owners (N = 509) were analyzed with multivariate generalized linear modeling. The networks involving forestry actors exhibited highest levels of trust, information seeking and perceived similarity of goals. The act of making a conservation agreement, as well as the type of conservation agreement made, was associated with the endorsement of biodiversity objectives and the three dimensions of social capital analyzed in the study. More specifically, owners who had made a conservation agreement perceived environmental and forestry actors' goals as similar to theirs, trusted in them most often, and sought information from them more frequently than owners who did not have any contract. Moreover, the owners with a fixed-term contract expressed goal similarity, trust, and information seeking behavior towards forestry actors more frequently than owners with a permanent contract, who in turn expressed the above ties more frequently towards environmental actors. These results increase the understanding of the role and importance of forest owners' diverse social networks in voluntary nature conservation agreements. The findings encourage the utilization of these networks more systematically and dynamically while implementing rural, environmental and forest policies in order to increase their societal impact in local contexts.

1. Introduction

Voluntary biodiversity conservation on private lands is based on cooperation between landowners, forestry and environmental experts and authorities, and other actors. Forest conservation programs worldwide increasingly face a dilemma between effectiveness and social acceptance (Clements et al., 2013; Chowdhury et al., 2014; Ma et al., 2012). While the principles of environmental justice (e.g., Agyeman et al., 2003) require equal opportunities for all beneficiaries to enjoy public environmental benefits and take part in environmental decision-making, voluntary conservation programs (Paloniemi et al., 2015; Rauschmayer et al., 2009) rest on private landowners' acceptance and thus are in principle highly sensitive to landowners' objectives and motivations. To balance the views of landowners and wider beneficiaries, an intensive communication and information delivery approach has become an integral part of conservation programs (e.g.,

Salomaa et al., 2016; Young et al., 2013), recently complemented with the spatial prioritization and targeted marketing of conservation contracts (Nielsen et al., 2017; Paloniemi et al., 2018). Current knowledge about landowners' social networks (Borg et al., 2015; Korhonen et al., 2013) and most influential information channels (Butler et al., 2007; Häggqvist et al., 2014), would benefit from a more nuanced understanding of landowners' communication partners and their messages.

The Forest Biodiversity Program for Southern Finland METSO (later Biodiversity Program) is a rather thoroughly studied example of voluntary conservation Programs, (see e.g., Borg et al., 2015; Paloniemi and Tikka, 2008; Paloniemi and Varho, 2009; Paloniemi et al., 2018; Primmer et al., 2013). Biodiversity Program is based on the idea of using voluntary instruments where contract-making is based on trust, which typically evolves through good experiences of successful exchange of information (Hiedanpää and Borgström, 2014; Hujala and Tikkanen, 2008; Ostrom, 2000; Paloniemi and Vainio, 2014). For

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example, perceived differences between individuals often reduce trust but in these situations social interaction can help because it leads to the development of knowledge-based trust that, in turn, builds a broader, generalizable trust (Stolle et al., 2008). Individuals have a tendency to attend to information from the sources that they trust (Arbuckle et al., 2013) and therefore disseminating information to landowners about biodiversity conservation is more effective when it is done through social networks as compared to mass media or direct communication channels (Brook et al., 2003). At the same time, landowners' social networks, as well as their information search behaviors may vary, and therefore an effective information provision should use multiple information channels (e.g., Korhonen et al., 2013).

Forest owners' forest management objectives are related to their conservation motivations. However, the link between the two is not simple: for example, active wood producers may selectively favor conservation agreements on sites where a timber sale is not a profitable option, and the most environmentally-minded owners may not want to join any official conservation Program because of their intrinsic motivation to safeguard nature values on their own land instead of responding to some external financial incentives (Primmer et al., 2014). However, a share of owners may still find joining Biodiversity Program appealing, if it can be marketed and adapted to fit into their overall bundle of forest management (and ownership) objectives (Kline et al., 2000; Majumdar et al., 2008).

Forest owners' biodiversity conservation objectives are diverse and often linked with forest management objectives, and the perception of property rights (Paloniemi and Tikka, 2008). Forest owners' relationship with environmental conservation is often emotional (Lähdesmäki and Matilainen, 2014), let the origin be in intergenerational family ownership history (Törnqvist, 1995), strong environmental protection values (Cross et al., 2011), dissatisfactory experiences with authorities (Hujala and Tikkanen, 2008), or influences through lobby organizations or other mass media (Ferranto et al., 2012). Emotions are socially constructed in social interaction where emotions are ceased, strengthened, and redirected, and these processes influence the success of voluntary conservation. Therefore several branches of research have advised policies towards communication strategies that make use of owners' own social networks (e.g., Butler et al., 2007; Knoot and Rickenbach, 2011; Korhonen et al., 2013; Lind-Riehl et al., 2015).

Forest owners' perceptions of the quality of interaction with the forestry and environmental authorities, i.e. customer service, play an essential role in forest owners' experiences of voluntary conservation in Biodiversity Program (e.g., Korhonen et al., 2013). However, the characteristics of Biodiversity Program, as well, have an influence on how conservation communication is received (Mayer and Tikka, 2006). Acknowledging the role of emotions in land-related decisions (Markowski-Lindsay et al., 2016), an interesting aspect that shapes conservation communication is the type of the contract: permanent versus fixed-term. On one hand, while a permanent contract evidently is more secure from ecological perspective, it appears as an irrevocable and contradicting act for landowners who might have competing objectives or a motivation to pass decision power to their inheritors (Broch and Vedel, 2012). On the other hand, when looking Biodiversity Program participation from the innovation theory perspective (Rogers, 2003), while a fixed-term contract appears to be questionable in meeting long-term ecological objectives, it encourages late adopters of conservation innovation to make some kind of agreement instead of staying out of the Program (Korhonen et al., 2013).

In the Finnish case, permanent and fixed-term contracts do not only differ in the length but also in the governance: in the Biodiversity Program fixed-term contracts are made based on Forest Act (1093/1996) with forestry authorities, and permanent contracts based on Nature Conservation Act (1096/1996) with environmental authorities. An owner's perception of these actors and their agendas has been found to shape the opportunities of successful conservation contracting (Salomaa et al., 2016). In addition to the authorities with whom the

final contracts are signed, forest owners also cooperate with other actors regarding voluntary conservation contracts: local and regional non-governmental organizations and networks for forestry and nature conservation, companies promoting sustainable forestry, and official co-operation networks created to promote the Biodiversity Program (Borg and Paloniemi, 2012).

Forest owners seek information about land management practices through their formal and informal social networks, and owners' social networks have been shown to influence their forest management practices (Knoot and Rickenbach, 2011). Social networks are one example of social capital. Social capital has been defined as comprising of the social networks characterized by trust and reciprocity, which facilitate the coordination of actions and thus increase efficiency in society (Adger, 2001; Lehtonen, 2004; Putnam et al., 1993; Stone and Hughes, 2002). Borg et al. (2015) outlined trust, knowledge exchange and similarity of goals as the key dimensions of social capital in the context of biodiversity collaboration. Trust has been found to facilitate cooperation and it has been regarded as an important prerequisite for cooperation (Putnam, 1995). Moreover, trust is associated with values: individuals are more likely to trust the views of those information providers whose values they perceive as similar (Siegrist et al., 2000; Vainio et al., 2017). In the context of biodiversity collaboration in Finland, trust has been found to build especially among like-minded actors (Borg et al., 2015). Therefore it is possible that forest management and biodiversity objectives may guide with whom forest owners want to negotiate conservation contracts: forest owners may prefer those actors whose objectives they perceive as similar to their own. However, Borg et al. (2015) found that ties of trust in networks were based on past experiences of working together. Therefore it is possible that the perceived similarity of objectives only in part explains how forest owners build their networks, and the conservation contracts they may eventually make.

In this study we explored how forest owners' land management and biodiversity conservation objectives, as well as their social networks were related to success in nature conservation, i.e., the conservation contracts made. The analysis was structured around three main research questions. First, we explored how forest owners' social networks differed in terms of trust, information seeking and perceived similarity of goals. Second, we explored how conservation contracts were associated with forest owners' forest management objectives and biodiversity objectives. Third, we explored how these three dimensions of social capital were associated with the conservation contracts made. We discuss the results from the perspective of strengthening social capital in local rural settings as a means to safeguard a balanced implementation and effectiveness of forest conservation Programs.

2. Material and methods

2.1. Participants

We analyzed a survey collected in four regions that are important in private forest ownership in Finland: Reikijokilaakso-Hyyppärä, Pirkanmaa, Southern Ostrobothnia, and Northern Karelia. Different sampling strategies were used based on the number of forest owners in the region: in some regions, a total sample of owners was contacted whereas in other regions a random sample was contacted (Table 1). Moreover, in order to ensure a sufficient number of owners with a conservation contract, a total sample of owners with conservation contracts in the Northern Karelia region was contacted. The landowners replied to a postal questionnaire exploring various aspects of biodiversity conservation on a landscape level (described in more detail in Paloniemi et al., 2018).

The total sample size was 509. The mean age in the sample was 63.7 years (SD = 12.2) and 22.7% of the respondents were female. Most common educational level in the sample was a vocational degree (25.3%) followed by comprehensive school degree (23.8%) and a

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