



Bringing local socioeconomic context to the analysis of forest owners' management



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ABSTRACT

Regional and local differences in public perceptions and attitudes towards forestry have often been explained by socio-demography, farming structure, living standard, and other socioeconomic attributes of different geographic locations. These attributes have been used much less to explain regional differences in private forest owners' objectives and practices. We explore the connection between local patterns of non-industrial private owners' management practices and the socioeconomic characteristics of the local context. Discriminant linear canonical analysis of data for 2406 owners in 26 rural areas in Portugal allows us to discuss the relevance of the socioeconomic features of local context, such as forest sector economy, agrarian structures, and broader socio-demographic dynamics, to understand the owners' management practices. Our findings reveal the importance of the features considered, especially socio-demography and agrarian structures. However that importance differs according to the type of forest practice under consideration, i.e., harvesting or bush clearing. This study provides a better understanding of the factors that shape the management practices of forest owners and contributes to improve the design of forest policy to be more adjusted to regional context.

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Introduction

Non-industrial private forests, that is, forestlands privately owned by farmers, individuals, or corporations other than forest industries, account for much of the total forest area of several European countries (Harrison et al., 2002; Brandl, 2007).

In the literature addressing the differentiation of non-industrial private forest (NIPF) owners, the analysis of their management objectives and practices has, until now, taken into consideration mainly the owners' socioeconomic profile and the attributes of their forest property (Hujala et al., 2012; Novais and Canadas, 2010). This applies to the analyses that follow a more utilitarian approach, in which forest owners are seen as profit or utility maximizers (Amacher et al., 2003; Josh and Arano, 2009), and also to those analyses following a more cognitive approach, recognizing the norms and values of the owners, as in most of the recent NIPF typologies (Madsen, 2003; Boon and Meilby, 2007; Emtage et al.,

2007; Urquhart et al., 2012). The attributes of regional context are brought in only when a justification is needed to account for differences amongst forest owners' samples from different regions (Greene and Blatner, 1986; Normadin and Rouselle, 1986; Karppinen, 1998a). On that basis, for those authors who suggest conditioning factors for territorial differentiation of NIPF owners' management, the way those factors operate is often not explicit, much less empirically verified.

Regional or local attributes are more commonly found outside of the strict realm of NIPF owners' studies. It is the case, for instance, of the analyses of land use changes resulting from landowners' management (Marey-Pérez and Rodríguez-Vicente, 2008; Mondal et al., 2013) or, of public perceptions and attitudes towards forestry (Elands et al., 2004; Dhuháin et al., 2009). Regional and local differences in afforestation or in public perceptions towards forestry are often explained by socio-demography, farming structure, living standard, and other socioeconomic attributes of different geographic locations (O'Leary et al., 2000; Elands et al., 2004; Dhuháin et al., 2009).

In order to shed some light on the issue of local differentiation of NIPF owners' management, we here explore the connection between their practices and the socioeconomic characteristics of rural areas where those practices take place. To do so we must first establish local patterns of management practices, choosing the

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local (parish) level as our level of analysis. Our main goal is thus to identify the socioeconomic dimensions of the local context that differentiate the local patterns of owners' management practices. We ascertain the relevance of the forest sector economy, and other local socioeconomic structures, such as broader socio-demographic dynamics (type of rural area) and agrarian structures, to understand those local patterns of management.

The identification and discussion are intended to suggest improvements in policy design and implementation, as well as strategies that are more adjusted to regional differences and have stronger cross-sectoral integration and coordination (Weiss et al., 2011). Such requisites are particularly important in our study case, Portugal, considering that forest is actually the country's dominant land use (35% of territorial area – ICNF, 2013) and NIPF owners account for 73% of total forestland (Radich and Baptista, 2005). These owners are also characterized by a considerable differentiation in their management practices and objectives (Baptista and Santos, 2005).

The literature review that follows grounds the choice of the local socioeconomic features whose relevance to differentiate the landowners' management will be evaluated. After a brief description of methodology and data, results are presented. Then, a discussion follows.

Analytical framework

Greene and Blatner (1986), Normadin and Rouselle (1986), and Karppinen (1998a), among others, advance factors for regional differentiation of NIPF owners' management. A comparison of the NIPF owners' objectives between southern and northern Finland leads Karppinen (1998a), for instance, to advance some variables possibly supporting the observed differences. Socio-economic ones include: regional economic structure (the weight of forest in GDP, average per capita income, presence of the forestry industry) and cultural differences (weight of traditional agrarian values).

Several contributions are gathered below which were used to build an analytical framework of the relationship between local context and NIPF owners' management. Those contributions are organized into three parts: the relationship between agriculture and forestry, the structure of forest economy, and the relationship between forest and rural development.

Agrarian structure and forest management

The relation between agriculture and private forest management has usually been approached at the owner level namely by distinguishing between farm forest and non-farm forest owners.

In fact, the increasing number of the later has been well documented for several European countries and the USA (Dhubain and Greene, 2009; Karppinen, 1998b; Kvarda, 2004; Normadin, 1996). These non-agricultural owners live in more urban areas, have non-farm professions, and depend on non-agrarian livelihoods (Kvarda, 2004).

It is not clear whether being a farmer leads to more active forest management. For instance, Normadin (1996) questions the supposed advantages for forest owner of being also a farmer, considering that the availability of family labour, skills, and farm equipment is not easily transferred to forestry, a sector reputed by farmers to be specific.

Some authors argue that this is due to a common agrarian origin of both farm forest owners and non-agricultural forest owners. For Kvarda (2004) their main difference resides in their management objectives, because both are active owners. The first (part time or full time farmers) consider forest as part of their farm and normal work. The second take care of woods in their leisure time, drawing

on their agrarian origin that ensures them experience, knowledge, and even equipment.

Turning to the local level of analysis of the relation between farming and private forest management, the notion of local agrarian structure relates to the idea of a common origin of farm and forestry structures. This common origin can be expressed in land property size or income, as well as local values and attitudes towards family work mobilization or technical innovation.

In the Portuguese context, dissociation between agriculture and forest management is recent. It is estimated that at the beginning of this century farm owners still held three fifths of the forest area (Baptista, 2010). Therefore, the evidence of a common structure between agriculture and NIPF leads us to suggest a certain transposition into the forest of the traits of territorial differentiation of the organization of farm production.

Forest economy and management

From the literature, there is reason to believe that forest owners' objectives and practices are influenced by local industrial demand for forest raw materials and the presence or lack of a network of service providers in the area.

Concerning the demand for raw materials and European context, Hyttinen et al. (2000) consider that the need of the manufacturing industry for a regular supply has an important role in keeping owners interested in managing their woods. This demand should be particularly important in the vicinity of the factories, where transportation costs are lower (Soares et al., 2007). However, Hyttinen et al. (2000) consider that, although underpinning the demand for regional forest products, large scale factories are less dependent on local supply.

In any event, supplying the manufacturing industry gave rise to a network of service providers, ensuring the link between industry and forest owners. Outsourcing of activities to these forestry contractors has increased in recent decades, especially from the 1980s on. Slee (2006a) believes that in Britain this move towards outsourcing resulted in a drastic reduction of the locally resident workforce, a finding that is repeated for many other contexts worldwide (Anderson et al., 1996; Canadas, 2006).

Following Westermayer (2006), it seems useful to distinguish two situations regarding the relationship between contractors and forest owners: (i) a regional strategy, in which contractors (traditionally farmers but also professional contractors) operate in a region through long-term relationships with local landowners; (ii) a chain strategy, in which contractors cover a larger area limited in size mostly by the cost of transporting machinery.

Regional strategy involves a small range for contractors (Legendre, 2006; Schepens, 2007; Mäkinen, 1997), strengthening the link of forest to local economic agents. Chain strategy is abundantly documented in settings dominated by large public or private forest property (Anderson et al., 1996; Riella and Mascheroni, 2009). The predominance of one or the other has a clear influence on local employment, as well as on the impact that the provision of locally based forest services may have on NIPF owners' management.

Two opposing models of the forestry sector structure can then be defined when combining forest industry and services supply. The first consists of locally resident forest owners using family, direct wage labour, or indirect labour of small local contractors, and producing for the local processing industry. A second model involves industrial forest ownership, exclusively with outsourced labour, provided by forestry contractors operating over a large range, and geographically highly concentrated manufacturing.

The link between local forest economy and NIPF owners' management is stronger in the first model. Therefore, it is expected that in territories with a greater weight of forest economy, there will be

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